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THE FUNCTION OF THE SPLEEN.

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It must, of course, be merely tedious to attempt to bring forward details of experiments, observations, and various views and doctrines found in medical literature, respecting the anatomy and physiology of viscus; and mere presumption to attempt conclusions, of matters which have proven a stumbling-stone to authorities of the greatest weight and eminence. But, therefore, the subject still lies at our door, challenging the scientific and philosophic scrutiny of this age, and to this end I would reproduce it to the attention of this Society.

In part, doubtless, owing to the inherent security of the function of this organ, and partly because of the demonstration of the practicability of existence without it, both in animals and in man; its importance in the animal economy, both as regards its function in health, and its pathological conditions and relations in the diseases of the body, is greatly underrated; and so our knowledge is abated and limited. For, if true, that its functions are vital and, therefore, its maladies absolutely and relatively grave, in that truth is to be found the stimulus to research, adequate to the erasure from medical literature of the opprobrium of this confessed superficialness and ignorance.

It must be fairly illustrative of the state of our knowledge or science of this subject, no longer ago than the pupillage of some of us who, in this Society, are but junior members, to quote in brief the views of so eminent an authority as Dr. Carpenter. He introduces the spleen as an organ having "no excretory duct, nor anything glandular in its structure." * * That, "in regard to the functions of the spleen, great uncertainty exists. That the spleen performs no action essential to life, has been repeatedly proved, by the experimental removal of it in many of the lower animals, and by the accidental loss of it in man, * * for after the immediate effects of the wound were recovered from, the vital functions were performed with no perceptible interruption, and health appeared to be completely restored." * * That "one of the numerous theories of its operation, which have at different times been brought forward, the one which is most satisfactory to the author, is that which regards it as a sort of *diverticulum*, or reservoir, which may serve to relieve the portal venous system from undue distension under a great variety of circumstances." * * That, "from the observations of Mr. Dobson, it appears that the spleen has its maximum volume at the time when the process of chymification is at an end, *viz.*, about five hours after food is taken; and that it is small and contains little blood, even hours later, when no food has been taken in the interval. Hence, he inferred that this organ is the receptacle for the increased quantity of blood which the system acquires from the food, and which cannot, without danger, be admitted into the bloodvessels generally, and that it regains its previous dimensions after the volume of the circulating fluid has been reduced by secretion."

Later, and contrariwise, Dr. Dalton propounds the case thus: "The spleen is a glandular organ, analogous in its minute structure to the solitary and aquinated glands of the small intestine, and to the lymphatic glands throughout the body. Like them, it is a gland without an excretory duct, and resembles, also, in this respect, the thyroid and thymus glands and the supra-renal capsules. All these organs have a structure which is evidently glandular in its nature, and yet the name of glands has been

refused to them, because they have, as above mentioned, no duct, and produce, apparently, no distinct secretion. We have already seen, however, that a secretion may be produced in the interior of a glandular organ, like the sugar in the substance of the liver, and yet not be discharged by its excretory duct. The *veins* of the gland, in *this instance*, perform the part of excretory ducts. * * The action of such organs is, consequently, to modify the constitution of the blood. * * The precise alteration, however, which is effected in the blood during its passage through the splenic tissue has not yet been discovered."

The views of these eminent authorities in medical science and education, are here adduced for a double purpose:

1st. Of generalizing and fairly representing, as is supposed, the vagueness and contradictoriness of an accredited and standard literature of so modern a date; and,

2d. As affording us a convenient reduction of the matter of knowledge and to two recognized hypotheses, utterly inconsistent with each other, but within which—the one or the other—the truth may possibly be found, namely, the "*diverticulum*" or reservoir theory of Dr. Carpenter, on the one hand; and the *glandular* theory of Dr. Dalton, on the other hand.

Nor let it be supposed that Dr. Carpenter is the mere man of straw, set up for easy refutation, whilst, even at the present time, our prevailing splenic pathology and therapeutics, ideas of mere sanguineous plethora and engorgement, and consequent distension, hypertrophy, etc., are essentially grounded in the reservoir assumption.

This organ has a prominent position as a member and link in the golden circle of the great blood factories, and, accordingly, receives, in common with the stomach and liver, the first blood dispensed from the abdominal aorta. And, again, no other organ of the body receives so large a stream from the arterial fountains, in proportion to its size; and it returns the largest product in proportion to what it receives, its vein having six times the capacity of its artery. Its artery is larger than both the hepatic and gastric, and in its course dispenses twigs to the

stomach and pancreas, as if its organ were in some special honor and dignity among its compeers. Again, it receives and acts upon only the purest blood of the body, and has no excretory duct—suggestive that its work can scarcely be subordinate or menial, neither depurating nor emunctory, but some superior service in the abdominal order and series looking primarily to a common end and use, namely, the initiation and consummation of the blood. And, accordingly, it transmits *all* its products through the sanguineous and lymphatic channels directly toward the fountain-head and palace and kingdom of the blood.

Thus, its position among the organs related to the production of the blood, the peculiar quantity of its arterial and venous streams, the absence of depurating and emunctory apparatus, the direction and destination of all its products, are facts whose concurring import amounts to a sort of *prima facie* evidence that this organ may be entitled to a distinguished rank as a primary blood generating factory.

But this is a mere outside view, to which the argument is by no means limited. Let us now look within, and see what we shall see. And here we will pass by its membranes, its large vessels, its trabecular meshes, etc.,—the framework only of the body, matters not in obscurity or dispute—and enter the intertrabecular spaces, the chambers and workshops of the factory, in which we are to see the peculiar substance of the spleen—at first view, a pulpy mass of “dark, reddish-brown” color, including corpuscles, capillary meshes, etc., altogether constituting the chief part of the entire bulk of this body.

Now, what have we here in this mass of confusion? Is it inexplicable chaos? Or shall rational, inductive science yet illustrate and demonstrate herein the most complete order and the most beautiful and productive skill?

The foundations of the answer to this very practical question were begun to be laid two centuries ago, when the Italian, Malpighi, the father of microscopic anatomy, first entered these hitherto dark chambers. Up to his time, the prevalent views among scientific men of Europe, in common with the earlier Greeks also, were only vague notions, some of which have still

found their way down to our own times and country. Such as it was a useless and superfluous part of the body, an error of nature; or, that it was for the preservation of the equilibrium of the body; or, that it attracts watery materials from the stomach; or, that it was the sewer of the humor called *atrabilis*; or, that it fermented a menstruum for the stomach in digestion; or that it was the origin of laughter; or that it prepares the mucus to be secreted by the glands of the joints, etc.; and by rather more recent German and English authorities, (Schelnammer, Liston, Purcell, etc.) that it was a *diverticulum* for the blood in the more violent motions, etc., etc.

But Malpighi taught: "In the interstitial spaces of the spleen, we observe clusters of glands, or, rather, of vesicles or sacculi, in immense numbers, dispersed throughout the organ, and closely resembling bunches of grapes. These minute glands are of an oval figure, and about the size of the glands of the kidneys. I have always found them of a white color, and although the bloodvessels of the spleen may be fully injected with ink, and play around the glands, yet the latter still preserve their whiteness. They appear to consist of a membranous, but soft and very friable substance, the cavity in which is invisible by reason of its smallness, but still may be conjectured to exist, because these bodies collapse when cut. They are extremely numerous, indeed, almost innumerable, and are placed in a singular manner in the cells already described, all over the spleen, and hang from the productions of the capsule, or from fibres arising therefrom; consequently, from the extremities of the arteries and from the ends of the nerves, moreover, the ends of the arteries wind about them like tendrils of ivy. They usually hang in bunches, each cluster consisting of seven or eight glands."

Again, Winslow, the Danish anatomist, the disciple and later cotemporary, affirms: "The arteries, veins, and nerves, after entering the spleen, divide and subdivide into a great number of ramifications, and accompany each other to their very last divisions. The capillary extremities of all these ramifications, both arterial and venous, end in the small downy cells already

described. Malpighi regarded these cells as distinct capsules or follicles, each containing a small gland. The extremities of the capillary ramifications seem to swim or float in the cells and to fill their downy tissue with blood. At the ends of several of these capillaries, I have observed small corpuscles disposed like bunches of grapes; and I have seen two little tubes going out of each corpuscle, one short and open, the other long and small, which latter was lost in the sides of the spleen," etc.

Other and later investigators have abundantly confirmed and amplified these discoveries into the further particulars, as, that these splenic bodies are not only covered on their exterior by a complete capillary network, but that they are also *penetrated* and permeated by this vascular distribution, and also that the entire splenic pulp is made up of several other varieties of glandular bodies, suggestive of complexity of function.

In brief, authority and opinion have gravitated to the general conclusion above stated from Dalton, namely, that this is a glandular organ, analogous to others of the body having no excretory duct, and in some way and extent concerned in modifying the constitution of the blood, but in what way may, perhaps, justly be said to have received no adequate scientific attempt until the very last years.

Fifteen or twenty years since, Virchow propounded and defended certain specific doctrines concerning the origin and morphologic changes of the blood: as, that "every permanent change which takes place in the condition of the circulating juices must be derived from definite points in the body, from individual organs or tissues. * * All the morphological elements of the blood, *whatever may be their nature*, are considered to be derived from sources external to the blood * * that in the ordinary course of things, the lymphatic glands and the spleen are really intermediately concerned in the production of the formed elements of the blood; and that, in particular, the *corpuscular constituents* of this fluid are really descendants of the cellular bodies of the lymphatic glands and the spleen, which have been set free in their interiors and conveyed into the current of the blood."

But it probably remains to our own time and countrymen to consummate the solution of this problem, and bear the torch-light of demonstrative science throughout its dark and most intricate mazes. And, already, sagacious and indefatigable explorers have reported important progress.

Within the last year, Prof. Salisbury, of Cleveland, Ohio, has published a paper which may justly be admitted to be the ablest contribution ever made to medical literature upon this subject; richest in original research, and in its facts and reasonings and pertinent suggestions. Besides the arterial terminations by capillary ramifications upon the Malpighian corpuscles, he distinguishes, also, terminations in glandular structures of two other varieties, namely:

1. In *tubular glandules* followed by simple capillaries; and;
2. In *tubular glandules* followed by oval splenic bodies.

In these, he discovers and traces the formation of fibrine cells, and their transformation into fibrinous cells. "These fibrin cells," says he, "during their slow, creeping passage through these thin-walled vessels, are gradually, after becoming fully mature, spun or developed into fibrine filaments of extreme tenuity and transparency, so that by the time they have reached the veins they enter them as fibrin filaments, or as cells far advanced in filamentous metamorphosis." Moreover, "there are two sets of these cells, an internal and an external—one arranged longitudinally, the other transversely. Both possess singular powers of contractility, like that of the muscular fibre," etc.

And again, "when the fibrin cells are developed into filaments, their nuclei are set at liberty, take up nerve and coloring matter, become highly transparent and homogenous, assume a flattened shape, and form *blood discs*. This process can be traced through all its stages in the living spleen." "The spleen and lacteal and lymphatic glands are the main organs that organize fibrin cells and blood discs." And, "of all these glands, the spleen is the most important and the most largely engaged in this cell-forming process."

Indulge me in the notice now, of one other fact claimed by

this observer, namely: "In the spleen are found minute bodies containing a mesh of highly refractive cylindrical capillaries. * * They are always distended, highly refractive, and of a beautifully, pearly lustre. They resemble a meshwork of fine pearl-glass tubules. In these vessels may be noticed minute pearly drops, and on the membrane stretched across the meshes, the same kind of pearly drops aggregate into more or less spherical masses," and then, again, into larger globules, etc. And, finally: "These large globules take on a cell wall, and we have formed the genuine corpora amylacea." * * "They are the true myelin cells, or those cells which contain medullary nerve matter." And, again: "The contents of these cells after it has escaped from the cases, become aggregated into large globular masses, and from the sides of which are developed beautiful, double-walled, pearly, tubular filaments, precisely like those of *nerve tissue*."

Now the above series of observations and facts, connected and corroborative, as landmarks indicating the progress of this inquiry through the last two centuries, are believed to embrace grounds and conclusions from which histological and physiological science will not recede, namely: Of this organ, its duct is not in the direction of depuration or emunctory work. It receives more arterial blood than can be appropriated to its own nutrition, and its large venous duct conveys away larger products than the residue and debris of its functions. And its products are sent exclusively towards the fountains. Also, its interstitial spaces are filled up with a variety of glandular bodies, unto which, as unto so many furnaces, and forges, and mills, are the ultimate ramifications and determinations of the apporthing arterial streams, and from which bodies also arise the absorbent and capillary origins of the departing venous and lymphatic trunks, which take up and bear away towards the sources of the blood materials unlike those received. So that, with the exception possibly of a minor system of anastomosing capillaries, the arterial stream, with all its vast supplies, must pass between the upper and the nether millstone of glandular structure, to be resolved into its principles and reorganized into

new forms for the perpetual reproduction and reconstruction of the blood.

And, lastly, one stands amid these workshops and sees the actual initiations and progressions, first, of the fibrin cell with its ultimate development into the contractile filament, looking to the end of muscular nutrition; and then its nucleus developed and formed into the red-blood globule; and this, again, is here ermined and crimsoned, and sent away freighted with treasures for distant ports of the realm. And here is witnessed also the generation of the myeline cell, with its medullary substance and nerve filament, looking to the end of the endowment of the blood-disc, the surrounding and protection of the axis cylinder of the nerve conduits, and the ultimate nutrition and reproduction of the essential substance of the brains and the nerves.

Finally, this view is amply corroborated in the phenomena of ascertained pathological states of this organ—as,

1. In the case of deficiencies of coloring matter in the blood, as also in diseases of discolorations of this fluid, confessedly phenomenal of congestions, irritations, inflammations, indurations, hypertrophies, etc., of this viscus. Virchow, after a scrutinizing survey of the subjects of leukæmia, melanæmia, melanotic tumors, etc., concludes “that all the facts with which we are acquainted, concerning these conditions, indicate that the contamination of the blood has its rise in a definite organ, and that this organ, as in the colorless blood corpuscles, is generally the spleen.”

2. In the case of the removal of this gland from the body, the voracity and increased ferocity of the animal until the consequent deficiencies of the blood in the above-named materials for muscular and nervous nutrition are compensated by the vicarious functions of associated and kindred organs, afford additional corroboration.

3. Another interesting and important class of corroborative facts are the sensational, intellectual, and moral symptoms of the patient, in the functional disorders of this organ, commonly reputed, not only in popular, but also in professional parlance,

to be splenic affection of the mind, such as general irritability, particularly of the irascible dispositions, peevishness, moroseness, apprehensiveness, despondencies, anxieties, nostalgia, and, possibly, various monomanias, etc. This class of symptoms direct our attention, unmistakably, to deficiencies in the elements of cerebral and nervous nutriment, namely, medullary and nerve filament substances, the generation of which in the spleen has been ascertained as above mentioned. And, furthermore, Prof. Salisbury observes: "These (myeline cell substances) are taken up by the blood-discs which transmit them to their destinations. This matter communicates a high degree of plasticity and refractive pearly lustre to the discs. * * * The myeline performs the office of surrounding the axis cylinder of the nerves, forming an insulating tunic between it and the nerve sheath, which prevents the nerve from escaping in its transit, save at the terminus."

The relation of these matters to the nutrition and healthy and complete functions of the nervous system is so palpable, that the Professor insists "that by simply examining the blood microscopically, it can readily be determined whether a person is actively engaged in mental pursuits, under the influence of nervous exhaustion of any kind, or whether he is purely devoted to physical undertakings, is strong and robust, and is laboring under no influence which is exhausting his nerve tissue."

If now, in conclusion, it should be true, as the above chain of facts and reasonings tend to show, that in this organ as a *factory*—not as a mere *secreting* gland—are the generations and initiations *de novo* of the fibrin cell and contractile filaments appertaining to the support of muscular tissue, and, also, of the myeline cell and nervous filament appertaining to the support of nervous nutrition and function; and, also, of the red blood corpuscle as, possibly, the carrier of certain supplies to glandular ports and marts abroad; and, finally, if on the other hand, there be found, concomitant with its abnormal conditions, muscular inanitions and debilities, mental and moral irritabilities and depressions, disturbance of the proportion of

the red and white blood cells, discolorations of the blood, etc., etc., we are, then, already on pretty fair advantage ground for the ultimate realization of a truly scientific physiology and pathology of this viscus. And this event may also possibly be hailed as the signal of deliverance for the liver and stomach and other of its neighbors that have, through the long time, endured and suffered untold indignities and penal inflictions for offenses not their own.

THE PHILOSOPHY OF TYPHOID OR CONTINUED FEVER.—A STUDY OF ITS DYNAMICS AND TREATMENT.

By Z. C. McELROY, M.D., President.

Read before the Muskingum County (Ohio) Medical Society, Jan. 1, 1908.

In the discussion at our last meeting, on the treatment of typhoid fever, one of our fellows facetiously remarked, that "to treat a case of typhoid fever, it was a needful preliminary to have a case to treat." This remark meant, if it meant anything, that the diagnosis was sometimes difficult, or, if not difficult, the name was given to patients and friends for other purposes.

It occurred to me, that we could better understand a discussion of the treatment of any disease, if we had, as a preliminary, some common understanding of its nature and pathology.

It is my purpose, with the permission of the Society, to present it a picture of typhoid or continued fever, as studied in the light of modern philosophy, and the empirical facts in relation to it, common to medical minds and literature.

And, first, as to its cause or causes—most likely immaterial—the ordinary forces of nature acting in an ordinary way. It may, however, be accepted as certain, that it has two modes of origin, within the body, and from without the body, of those who suffer from it.

These are classed as sporadic, and endemic and epidemic cases. Probably, the most of the cases met with in our locality

arise from causes acting within the body of the patient; though cases from contagion—contact with others suffering from it—do occasionally occur.

The symptomatology may be briefly summed up in the words “loss of power, or loss of force.” The dynamics of the system are turned into new channels. The stomach, the citadel of the system, refuses or rejects food; or, if retained, passes it on into the bowels undigested, where it undergoes decomposition, giving rise to uneasiness, pain, tympanitis, or diarrhœa. The muscles lose power, patients cannot and do not walk about with elastic step, and perform ordinary labor. The nervous system loses power; the brain cannot and does not act as in health. Every symptom may be referred to loss of power. A patient suffering from typhoid or continued fever must be regarded as in a condition of partial death. Coincident with loss of power, there is loss of bodily weight, whether with or without diarrhœa, sweating, expectoration, or hemorrhage.

With this loss of power and weight, we might, without patient thought, and philosophy to guide us, and the use of that unerring tell-tale of temperature, the thermometer, conclude we either have, or ought to have, diminished heat or temperature; but not so, the “burning disease” was correctly named; the temperature is constantly higher than natural, and its exaltation above the natural standard is a tolerably accurate measure of the intensity of the disease.

Now, what is the meaning of this series of phenomena, philosophically? In endeavoring to find the solution of this inquiry, we must keep constantly before the mind the fact, that no effects of force can be manifest to our senses, except as the result of some preëxisting force, and that no force is ever lost; it may be constantly changing its form, but is never destroyed. Now, why this loss of force and wasting in continued fever? Manifestly, the soft tissues of the body are burning up. And why? Because the fever poison has rendered more or less of them unsuitable for the further uses of the body. The diminished forces of life are diverted into new channels. The dynamics of life are engaged in consuming and removing out of

the body the effete or unsuitable tissues, and the phenomena can only be regarded as a conservative process, intended to save life. Boerhave's definition of fever, was, all things considered, the best ever given: that "fever was a mode of life resisting death."

The extent of tissue made useless to the body by the cause or causes of the fever, determines its duration, intensity, and termination.

If all the muscles were in a state of integrity, measured by the standard of health, they would not refuse to act. So of the various tissues of the viscera and nerves, including the sensorium commune.

Just in proportion to the delirium or coma, is the quantity of brain matter unsuitable for the further uses of the organism, large or small.

Nor are the tissues, or parts of tissues, thus rendered useless, if left in the body, harmless, as would be a piece of lead, gold, or silver, accidentally embedded and encysted in the body, nor yet in masses, as in sphacelus, but is deposited or exists interstitially through the muscles and organs, and perhaps enclosed in the interior, or in close proximity to the exterior of the osseous structures, as evidenced by the aching and soreness of the bones, as patients express it.

Of the nature of the changes occurring in the molecular structure of the tissues, from the action of the fever poison, it is impossible to speak, with any certainty, in the existing state of knowledge. We have no means of determining the nature of the changes in the tissues in beings killed by lightning. But the facts are known, that death does occur from shock by lightning. In many instances, there are certainly no changes of which our senses can take cognizance. The inference then, is irresistible, that the electricity has made such changes in the molecular structure of the tissues as to cause death. And the inference is equally irresistible, that the cause or causes of fever induces analogous changes in the various textures of the body, so as to render portions of them unsuitable for the purposes of life.

Further evidence, that such must be the condition of things in continued fever, is the fact that the tissues continue to waste; first, the adipose, then, the muscular and other soft, and, probably, portions of the denser tissues, until the emaciation is sometimes extreme. This waste of the tissues is always a prominent feature in continued fever, commencing sometimes days and weeks prior to the patient taking to bed or seeking medical advice; and this is more especially the case in patients in whom the fever poison is generated in their own systems. Occurring from the poison being taken into the system from without, the prodrome is always shorter, the development of the symptoms more prompt and decisive, and, it may be added, with proper medical treatment, the duration shorter. It may, indeed, prove to be true, that the difference in the origin of continued fevers may constitute the difference between the types known as typhoid and typhus.

Now, the human body in health, probably decays more rapidly than after death. The tissues, in fact, are perpetually renewed during life and health. The dynamics of life are due to the retrograde or destructive metamorphosis of the tissues, just as much as the phenomena of electro-magnetism are due to the oxidation of a metal. The sum of the mechanical, intellectual, emotional, sensational, psychological, and thermal work, or force, of a human body, is an exact measure of the destructive metamorphosis or oxidation of the tissues of the body, and the maintainance of an equilibrium depends on the amount and quality of food that can be taken into the system, and assimilated to its various organs and textures. How long would any of us live without food? And what would be the extent of the waste of the body and the length of life, if compelled to work until nature was exhausted? The time is limited to days, perhaps, scarcely two weeks; and the waste, perhaps, half the weight of the body, or more.

Now, in continued fever, there is a certain amount of muscular, nervous, and vascular tissue rendered unfit for the production of the most of the ordinary results of life and health. If it were not so, we would not have the weakness and waste

inseparable from continued fever. The phenomena of the fever are the dynamical results of the oxidation, or destructive metamorphosis, of this destructive tissue. The desire for food has gone, and only those things whose action is known to facilitate destructive metamorphosis are demanded or taken by patients. Of these, water and vegetable acids, as lemon or acetic, are more acceptable than anything else the patient swallows. But no matter how treated by physicians or nurses, patients continue to lose weight—in other words emaciate—day by day, until the effete tissues, or parts of tissues, are oxidized and passed out of the body. The solid debris is found in the urine and alvine discharges; the gaseous products find exit at the lungs and from the bowels; and these gaseous products are offensive according to the amount of nitrogenized tissue undergoing transformation.

Complications arise in the course of the removal of this effete tissue, according as one or several organs have an undue amount of effete matter or tissue interstitially deposited in them. If in the lungs, it is pneumonia; in the brain, more or less delirium or coma; in the intestines, or, more broadly speaking, abdominal viscera, there will be bowel-complaint, ulcerations, or, perhaps, perforations; in the dermoid tissue, sweating and abrasions; in the bloodvessels, pyæmia; and so on. Now, that is my understanding of continued or typhoid fever. If any fellow of our Society can name a single phenomenon, constant or occasional, occurring in the course of the disease, which cannot be explained by this hypothesis, it will give me pleasure to have it pointed out, for a solitary example has not occurred to my mind.

Viewed thus, the treatment of continued fever becomes a much more simple matter than it can be without this guide from philosophy. No *coup de etats* will be attempted, except in the earliest stages of the disease, originating from causes believed to be outside the body. Under such circumstances, there are very strong reasons for believing that strong emetocathartics do sometimes cut the disease short. Under other circumstances, they will fail to accomplish this end, but may

prove very advantageous in modifying the intensity of many of the symptoms. No specifics will find much favor in the hands of any physician guided by such views as it has been my endeavor to lay before you. As you cannot safely or profitably interfere with the destructive metamorphosis going on, upon which recovery depends, and giving the products every facility to find exit from the body, attention should be principally directed to supplying the system with the means of reconstructing its tissues. Remembering that the stomach, and, in fact, the whole digestive apparatus, is in a state of partial death, you would not offer it food in such forms as would be acceptable in health, for if you did, and did not wilfully misinterpret the results, you would hardly continue it. The part of digestion supplied by the glands of the mouth are, for the most part, wholly wanting. The capacity of the stomach to assimilate or digest food is fearfully diminished in grave cases. In speaking of symptomatology, you will remember, it was stated that solid food, for the most part, was not and could not be digested, and if not rejected by vomiting, and passed into the intestines, would there add greatly to their already embarrassed and disturbed condition. Food, then, in its highest state of organization, and in its most easily assimilable forms, should be given in small quantities and repeated at very short intervals—there should be no meals. Of food in this form, undoubtedly beef-essence and milk are the most important. Eggs would no doubt occur to your minds as another; but, until the crisis has been passed, eggs are about as likely, if not more likely, to do mischief as good; they decompose too readily, and their decomposition yields too many noxious gases and products, which can only add to the dangers and discomfort of the patient. But after the deepest depression has been reached and the stomach is resuming its tone and power, they are valuable food. Farinaceous articles may be given conjointly with beef-essence and milk, in fluid form, moderately, all through the disease, but the main reliance must be on meat-essence and milk.

If the destructive metamorphosis of unsuitable or effete tissue proceeds too rapidly, the patient succumbs early in the dis-

ease, or at whatever stage it takes place. Hence, the cautious use of agents to retard it becomes of the highest importance. The intensity of this metamorphosis is approximately measured by the thermometer, as well as by the circulation and respiration. Hence, ice, spirits, wine, ale, tea, coffee, valerian, belladonna, opium, aconite, and veratrum viride all have their uses, and each, properly timed, confer benefits.

As the life of the patient depends partly on the oxidation of the effete parts of the tissues, and the elimination of the products of the destructive metamorphosis out of the body, it can easily be seen that alcohol is a dangerous remedy, improperly timed, for the reason that its action is known to retard all of the processes going on needful to recovery, *viz.*, assimilation, destructive metamorphosis, and elimination; but exceedingly valuable in the low nervous states characterized by delirium, high temperatures, and excessive elimination.

It will, however, more frequently occur that destructive metamorphosis and elimination proceed too slowly, and, as a consequence, digestion and assimilation are well nigh annihilated. For the relief of this condition of things, the mineral acids, especially the chlorohydric, preparations of iron, quinia, chlorate potassa, or bicarbonated alkalies, will be our best agents. The citrate of quinia and iron is a valuable agent, possessing the double property of promoting metamorphosis and elimination, though the perchloride, pyrophosphate, or iron by hydrogen, are very valuable. Sometimes the simple bitters may be advantageously combined with them. Stronger wines and malt liquors are safer and better agents to modify waste than brandy or whiskey.

In the management of the complications, poultices of flaxseed meal, with small proportions of mustard, are of very high value in pneumonia, continuously applied; though it may occasionally be needful to abstract small quantities of blood by leeches or cups, and sometimes apply blisters. And of the brain, blood from the temples, or blisters to the temples or sides of the occiput, with ice to scalp.

For the bowel complaint, better food, that is, food that will

not be passed into the intestines undigested, with turpentine stripes, opiate injections to the rectum, opium and alcohol internally; with an occasional necessity for saturnine and vegetable astringents. Abrasions of the surface to be bathed with alcohol, and protected by artificial cuticle of gutta percha in chloroform, or lead plasters.

Viewed in this way, too, the necessity for light, ventilation, cleanliness, and constant attention becomes too obvious to be mistaken or neglected. Frequent sponging or wetting the surface with water or soap and water, or diluted acetic acid, or alkalies, is of the utmost moment.

Such are the outlines of the philosophy of typhoid or continued fever and its remedial management, as it appears to me, studied in the light of the persistence of force, and as cases are managed falling under my especial care. If you can pick them to pieces, do so, for if they are not true, and a safe guide in the management of cases, pray show me the more excellent way.

ENLARGEMENT OF THE SPLEEN, OF NINETEEN YEARS' STANDING, CURED WITH IODINE IN FIVE MONTHS.

By A. GIVEN, M.D., Louisville, Ky.

I was consulted, August 15th, 1867, by Mrs. Hinkle, on account of a tumor in the left side of the abdomen. She stated that 20 years previous, when 9 years of age, she had chills, which lasted for 9 months. About that time, there was a fulness observed at the margin of the ribs, on the left side, which her physician said was caused by an enlargement of the spleen, and for which she was treated by several physicians without any relief.

She is the mother of four children, and in the enjoyment of very good health. The tumor had never given her any inconvenience until after the birth of her youngest child, two years ago; since that time it had increased very rapidly. At the

time I examined her, there was no pain or tenderness, and the only inconvenience she felt was from its weight, when attending to her household duties. The abdominal parietes being lax and pretty free from adipose, presented a favorable opportunity for diagnosing.

Upon examination, I found the following characteristics of the tumor: its upper border lying below the margin of the ribs, attached to a cord-like substance. I traced it around to the left into the lumbar region, down to the crest of the ilium; lying close to that bone, I traced it around to Poupart's ligament, and along the pubis to a little beyond the median line; thence, in a slightly irregular line, to the umbilicus; thence, in a curved line, to the cord-like substance before spoken of. The iliac and pubic borders were thin and irregular, corresponding with the irregularity of those parts. The umbilical border was round, and had a ridge-like feel; the surface was slightly concave or slightly depressed between the thick umbilical border and the fluting iliac border.

In order to get a correct diagnosis, I placed the patient in the recumbent position, elevated her hips, and began to knead the lower part of the tumor; it readily passed upwards and outwards, until it caused difficulty of breathing by its pressure against the diaphragm.

During the examination, the question arose in my mind, whether the tumor was malignant, ovarian, or enlargement of the spleen. The first was readily dismissed, on account of the general health, freedom from pain, and the complexion of the patient. But it was not so easy to diagnosticate between ovarian tumor and an enlarged spleen, inasmuch as the largest portion of the tumor occupied the usual position of ovarian. The irregularity of the tumor and its mobility beyond the usual situation of ovarian tumors, enabled me to pronounce it a case of enlargement of the spleen. After consulting Wood, and some notes which I had taken some years ago, I felt no doubt as to the correctness of my diagnosis. During the winter of 1858, while attending the clinics of Dr. N. S. Davis, in the medical wards of Mercy Hospital, Chicago, a case was pre-

sented to the class for examination, on the 28th of October, which was similar to the one now under consideration, except the tumor was accompanied with a dropsical effusion of the abdomen, which rendered it very difficult to diagnosticate between ovarian tumor and an enlarged spleen. I was not present when the case was again brought before the class, and cannot say whether the woman recovered or not; but the remarks of Professor Davis made an impression on my mind, as to the possibility of the spleen becoming so much distended; and he gave such a fine description of the pathology of those cases and the method of diagnosing them, which did very much to clear up the doubts from my mind as to the character of the present case. Then, again, while I had charge of the Refugee Hospital, at Louisville, in January, 1865, I admitted a girl, 12 years of age, to the medical ward, who was in the last stage of phthisis. I learned from her mother that about a year previous she had had intermittent fever, which lasted her for several months, leaving her with a cough and enlargement of the left side, near the margin of the ribs. On examination, I found a large wedge-like tumor lying loose in the left side of the abdominal cavity against the pubis. She died in a few days after being admitted. I made a *post mortem* and found the tumor to be the spleen lying entirely from under the ribs and against the pubis.

Being satisfied as to my diagnosis and the character of the tumor, the next point of interest was as to the treatment to be adopted. I could not see much prospect of success from the ordinary treatment, as laid down for splenitis. It was evident that if relieved at all, it must be by resolvents and absorbents. With this therapeutic indication in view, I put her upon the following:

Ry.	Iodine,-----	gr. x.
	Iodide Potassa,-----	ʒij.
	Water,-----	ʒj.

M., and give 12 drops, largely diluted with sweetened water, after each meal; and ordered the following liniment to be used:

Ry. Camphor Soap Liniment, ----- ʒvj.
Tr. Iodine, ----- ʒij.

M., and apply to the tumor twice a-day.

I gave directions that if the stomach became irritable, to discontinue the treatment for a few days. After following the above treatment for two months, I again examined the tumor, and found it softer and diminished one-half. I continued the treatment, with the same precautions as to the effects of the medicine on the system. I made another examination on the 15th of January, 1868, and found the tumor entirely gone, except a little fulness near the margin of the ribs.

I confess that I had no hopes of such a favorable result at my first examination; for it is seldom that we can get a patient to continue our treatment long enough to remove those large morbid growths, and to overcome the pathological condition necessary to their production and propagation. But by the rapid increase of the tumor, she was easily convinced that unless something was done soon, serious results would follow.

MONSTRA ABUNDANTIA.—A CASE OF DIFFICULT LABOR FROM DEFORMITY OF THE FŒTUS.

By A. H. DE PUY, M.D., Toronto, Ind.

Being called to an obstetrical case, a short time ago, in which the diagnosis was very obscure, and the case rendered tedious and protracted in consequence of the deformed state of the child, which proved to be abdominal ascites. It contained about 11 pints of fluid, and measured two feet and one inch in circumference. There was nothing unusual in the first stage of labor, nor until the child's head presented at the inferior strait, when it became apparent that nature was not sufficient to terminate the case. I therefore sent for my obstetrical instruments, and my student, Dr. William H. Burtnett also sent a messenger for Dr. Daniel Camerie; all arrived in due time.

The patient being much exhausted, having been in labor 24

hours, we decided to give her an anodyne, and let her rest a short time. After examination and consultation, the pains returning, we succeeded in bringing down the head and arms, using traction; but making no further progress, we concluded next to dissect the head and shoulders, and perform version. This being done, I succeeded in securing the feet and bringing them down. We then introduced the blunt hook over the pubic bones of the child, using considerable force, but of no avail. Then we determined to remove the bowels and lungs, and thus cause a collapse. But, alas! to our surprise, the moment I perforated the abdominal cavity, an enormous quantity of fluid escaped, and the labor was terminated in a few minutes, *per vias naturalis*.

The woman made a good recovery, and is now living in Edgar Co., Ill.; is about 35 years of age, and mother of three children.

Proceedings of Societies.

MORGAN COUNTY MEDICAL SOCIETY.

The Morgan County Medical Society met on Thursday, December 12th, at 2½ o'clock P.M., at the Infirmary on South Sandy Street, with Dr. Henry Jones, the President, in the Chair. The proceedings of the last meeting were read and approved.

A motion was carried "that the names of applicants for admission to the Society be handed by the Secretary to the Committee on Membership."

The regular exercise for the day was then taken up. A verbal report upon the subject of Typhoid Fever, by Dr. Henry Jones. He could not be expected to say very much upon the subject in the short time allotted to him, but would endeavor to touch upon a few of the important points connected with the treatment of this disease.

The dearth of knowledge on the pathological conditions in fevers afforded us by the writers of the early part of this century, was commented upon, when the doctor gave his views upon certain points in the treatment of typhoid fever:

Little internal but active external treatment was the order for many years in France. Some recommended bleeding—others purging, and that only. I would first suggest, in relation to my own treatment, that particular attention be paid to the thorough ventilation and cleanliness of the sick room, and to the procuring of a good nurse. There should be no carpet in the room, and no draught of air over the bed of the patient. Activity of practice is not needed. Typhoid fever is often treated without being recognized. The peculiar rose-colored spots are generally present. There is always tenderness in the right iliac region. There may be no diarrhœa. I am prejudiced in favor of the old treatment, also of emetics, though they are now out of date. I think it would be well to use many things now out of date. In regard to purgatives, I would say that I do not think they interfere with the abnormal condition of Peyer's glands injuriously, but that they are relieved by keeping the intestines in a clean state. I employ mercurial purgatives in the first days of the disease, and in some instances occasionally in the farther progress of the disease.

Bleeding may sometimes be of benefit in typhoid fever. I have never been sorry when I have bled in this disease, but have sometimes been sorry that I have not bled. The famous French physicians were in favor of bleeding in the first stage. I do not think many patients are hurt by it in the first stage. I predict that hereafter more bleeding will be done than in the last ten years. I think the profession is veering round. There has been no change in the type of typhoid fever, but there has been a complete change of practice. I do not fear the diarrhœa of typhoid fever; fecal matter I consider a source of irritation; with gentle purgative remedies, I believe you will have no diarrhœa. I do not believe in the use of astringents. Do not be too sedulous to diminish the diarrhœa in this disease. We sometimes have hemorrhage. I place much reliance upon

ice-water injections; I also use gallic acid and sugar of lead. I often use pediluvia, sinapisms, opium, and tartar emetic. I use stimulants a great deal less than I did ten years ago. Stimulants have been very fashionable of late; stimulation in everything has been the order of the day. I think the profession are altering their views upon this point. I rarely give stimulants in the early stages of this disease. Where the patients like stimulants, and they are craved, I should use them, but not otherwise. Many of the best methods of practice have become obsolete, and many of the old customs of our fathers are occasionally revived as new practice. I have not time to say anything of diet. I have seen but three cases of perforation of the intestines; they all died. To recapitulate, briefly: I suggest, as treatment, bleeding, purgatives, and do not be over alarmed about diarrhœa—do not lock up the system.

Dr. Long had observed very excellent results from the ice-water injections in hemorrhage, and had been induced to believe that their application would be beneficial to the ulcerated condition of the intestines themselves.

Dr. Prince remarked: I have used the tinct. chloride of iron, and the sulphate of iron and capsicum, in this disease, with beneficial results.

Dr. Fisher remarked, that at the meeting of the State Medical Society, Dr. Noble, of Bloomington, stated that "typhoid fever was a disease of the bowels." What is it? Will the gentlemen give us their opinions as to the pathology of the disease?

Dr. Prince remarked, that, during the years 1861 and 1862, he had many cases of typhoid fever in military hospitals. We found ulcerations of the small intestines in all fatal cases. But the severity of the symptoms had but little to do with the extent, the number, and size of the ulcerations found upon *post mortem*. The eruption was generally observed, but not in all cases. In one case, I observed a condition of contraction of the intestine, caused by the cicatrices of the ulcerated patches of Peyer's glands, taken from a convalescent patient who died from eating an orange. The intestine was closed by stricture produced by

these cicatrices. In my opinion, the ulcers result from the poison of the fever, and are not the cause of the fever. The relations between the ulcerations and the fever I regard as certain, as the relation between the eruption and the poison in small-pox. In some cases, there was a slough hanging, ready to be picked off, while, in other cases, the ulcerations were healed over with a very perceptible cicatrix. We examined some 8 or 10 cases. One case of typhoid fever got well, was discharged from the hospital, returned to duty, but was very soon taken with pneumonia, and died. The *post mortem* examination revealed in the intestines some cicatrices and some ulcerations that were not healed, showing that men were not always well when they were considered so.

Dr. Edgar remarked, that specimens of pieces of the intestines of typhoid fever cases and of chronic diarrhoea cases, when compared, presented very much the same appearance. Referred to an epidemic of both these diseases, at the same time, at Vicksburgh, during the war. At the *post mortem* examinations in these cases, no sloughs were observed, but a ragged condition, as if sloughing had taken place, was observed in both diseases. We found well-marked cases of typhoid fever with no ulcerations of the bowels.

Dr. Prince remarked, that he had one fatal case of fever at the hospital before spoken of, in which there was no diarrhoea, but in this case he found more ulcerations than in any other case examined.

Dr. Henry Jones remarked, that where, in life, unequivocal symptoms of typhoid fever existed, after death, *post mortem* examinations always revealed local lesions of the intestine, or, at all events, so the profession abroad had decided.

Dr. Edgar stated, that he did not believe that there was a specific *materies morbi* necessary for the production of typhoid fever. He believed that a combination of causes affecting the nervous centres sometimes produced it. The Doctor read the statistics of a series of years of the results of the cases occurring at the Massachusetts Hospital, at Boston, showing different results during the different years, as he presumed, under the

same treatment. His inference was, that epidemics of typhoid fever varied in intensity, and some were much more fatal than others, no matter what the mode of treatment adopted.

Dr. Prince suggested that Dr. Austin Flint recommended sulphuric acid as a remedy. Had more faith, however, in fresh air, in tents, in warm weather. Dr. Flint reduced the mortality by this treatment in the open air, to at least ten per cent.

Dr. Fisher thought we ought to understand the pathology of the disease, before we could get at a proper line of treatment; for a variety of opinions had been expressed as to its cause. Some considered that the disease arose from ulcerations of the intestines; others, that the fever produced the ulcerations; others, that a combination of causes produced the disease.

Dr. Henry Jones remarked, that a distinction must be made between typhoid symptoms and the specific disease typhoid fever.

Dr. Prince said that Dr. Woodward had advocated the existence of a typho-malarial fever, which yields more readily to quinine, and this remedy is usefully employed where it could not be in typhoid fever.

Dr. Edgar suggested that flatus was a triumph of chemical over vital causes. A bougie might be employed to relieve it, but, as suggested by Dr. Samuel Adams, care should be taken to place the patient upon the right side during the process. He had used pills of nitrate of silver as a remedy in ulceration.

Dr. H. K. Jones, of Jacksonville, and Dr. Kimber, of Waverly, were appointed for essays at the next meeting.

At 5 o'clock P.M., the Society adjourned, to meet on the second Thursday in January, 1868.

C. T. WILBUR, M.D., *Secretary.*

Society met at 2½ o'clock P.M., at the Court House in Jacksonville, on Monday, January 9th, 1868.

Dr. S. S. Nesbitt, of Virginia, Cass County, was elected a member of the Society.

Dr. Henry Jones reported a very rare case, which had

recently occurred in his practice, and was requested by the Society to send the same to some medical journal for publication, as a contribution from this Society.

Dr. H. K. Jones, who was the appointee for the regular exercises of the day, read an interesting essay on the Function of the Spleen, and was also requested to contribute the same to some medical journal, as an emanation from this Society.

Dr. Edgar remarked that the essay was very interesting to him, by reason of its connection with the topic of the last month—for Dr. Bennett, of Edinburgh, had observed that the spleen was larger and more often diseased in typhoid fever than any other organ. Dr. Bennett's definition of typhoid fever is, "an essential disease, dependent upon some unknown constitution of the blood, the local lesions being consequential." In two fatal cases that were carefully observed by Dr. Bennett, no rose-colored spots were found. That seven out of sixty cases exhibited no lesions of structure, on *post mortem* examinations. The spleen was more constantly affected than any other organ of the body. He tried quinine, as a remedy, in eighteen or nineteen cases, and concluded that it could not be relied on.

Dr. Prince thought that typhoid fever might arise from air-poisoning, by the reconsumption of emanations from the body.

Dr. Henry Jones said that he did not think that the authorities and opinions offered by Drs. Edgar and Prince warranted us in discarding the old recognized ideas in relation to typhoid fever. I believe that we should occupy this ground: that it is an essential disease, produced by a particular agent; that the lesion of Peyer's glands are the almost invariable expression of the disease; and, also, that almost always appear the rose-colored spots.

Drs. Kellogg and King were appointed essayists for the next meeting.

At 5 o'clock, adjourned, to meet on the second Thursday of February.

C. T. WILBUR, M.D., *Secretary*.

Selections.

A SPRING AND SELF-RETAINING SPECULUM.

By NATHAN BOZEMAN, M.D., New York.

The vagina, as a membranous canal, in the distended state, may properly be said to represent a truncated cone with the base turned upward and the apex downward, corresponding with its mouth.

The general outline of the organ, as viewed in its natural condition, is such as would result from bringing the two opposing walls of the cone together, the cervix uteri being encircled by it at the centre of its base, and its mouth closed by the falling together of the labia majora.

The line, therefore, formed by the anterior and posterior walls of the organ coming together is transverse, while that formed by the opposing surfaces of the labia is antero-posterior, being at right angles.

Now the most natural indications for the dilatation of this canal with the peculiarities named would appear to be, first, separation of the labia, and, second, the two opposing walls of the collapsed cone, so to speak. This, scarcely need I say, is the view generally taken of the relationship of these parts, and the usual practice is based upon it of bringing within the field of observation the cervix uteri and the two vaginal walls.

This plan of antero-posterior dilatation of the vagina, it matters not what form of speculum is used, I conceive to be a popular error, and it is wholly at variance with the true anatomical relation of the parts. I shall, presently, attempt to explain more fully my meaning in our description of a *new form of speculum*, which I have the pleasure of presenting now to the notice of the profession. The principle of construction, as well as principle of action of this new instrument, will be found to differ from all others heretofore in use, in several respects, which I shall explain farther on. Suffice it to say, one of the very essential differences is in what might be termed the working point of the instrument, that portion which is applied to the resistance. The blades of our instrument are introduced between the opposing walls of the vagina edgewise, instead of flatwise, as formerly; and the dilatation is effected transversely or horizontally, as will be better understood when we come to

explain the principle of action. The same instrument applies to the dilatation of the vulva as well as the vaginal canal; thus giving us, at one glance, a view of the parts from the mons veneris to the cervix uteri in front, and behind, nearly the whole of the posterior wall of the vagina—any and every point within this extensive range being accessible for operative purposes.

The dilatation thus effected is so regulated that the labia and the two extremities of the vagina are put upon the stretch only to the extent desired, which is in strict accordance with the anatomical conformation of the parts, this being of such a nature as to make the instrument *self-sustaining*, one of its peculiarities; another being *elasticity of flexure*. This principle of elasticity has never before been embodied in any form of speculum that I am aware of, and its utility and importance, in my judgment, cannot be too highly estimated. Instead of the hard, inflexible blade formerly used, touching only at one or two points soft and delicate structures, we have now the soft, elastic spring adapting itself to all the points of resistance with a uniformity to be attained in no other way.

The indications for complete dilatation of the vagina and vulva I conceive to be four:

- 1st. Elevation of the perinæum.
- 2d. Elevation and support of the upper part of the posterior wall of the vagina.
- 3d. Transverse dilatation of the labia majora and the mouth of the vagina.
- 4th. Distension and steadiness of the upper part of the anterior wall of the vagina, the vesico-vaginal septum.

Now these are the indications to be fulfilled, according to my judgment, independent of any and all efforts of the patient to the contrary; and any instrument, whether *self-retaining* or not, that does not meet these ends, must be regarded as incomplete. With my instrument, I claim the accomplishment of all, *the fulfilment of the third and fourth indications* being an advance beyond all other methods, to say nothing of the *self-retaining* quality of the instrument, which, it must be admitted, is based upon more correct principles than any plan heretofore presented to the notice of the profession.

As regards the position of the patient, I propose a few remarks before entering upon the description of our instrument, as I consider this of no little consequence in certain operations, especially those upon the anterior wall of the vagina.

While our speculum is equally well adapted to all positions,

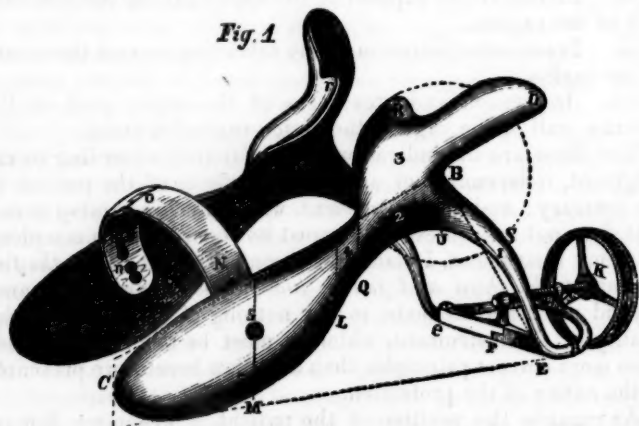
I prefer, in the description and application of it, to consider the patient resting upon her knees and breast, the body forming a right angle with the thighs, and the thighs a right angle with the legs. This position I now prefer to all others, and, with propriety, it may be termed the *right angle position upon the knees*.

In no other position, according to my judgment, whether chloroform be used or not, can the patient be made so easy, comfortable, and secure, and without the aid of assistants. Our supporting frame, when folded up, is compact, light, and portable, and weighs only eleven pounds. It exceeds twelve inches in height, only on one side, the depth and width being twelve by eighteen inches. I hope before long to be able to publish a description of this *thoracic rest or support*.

We have come now to the most difficult part of our task, a description of this speculum.

Fig. 1 (half size) represents a front quarter view of the instrument, expanded, as when introduced for use.

The general features of it, as shown, are outstretched arms, expanded wings, rolling surfaces, standing and projecting arches, broad, contracted, narrow, and rounded points; and the thumb-screw arrangement indicates that the whole is moved by a system of leverage.



The proportions of the instrument, are, I think; in harmony, and the construction will be found to be in strict accordance with well-known geometrical principles. It may be said to be

composed of two simple, similar bent steel levers, about $8\frac{1}{2}$ inches in length, rounded and flattened at certain points, having elasticity of flexure, and connected at one extremity by a pivot-joint, around which they revolve horizontally.

For description, therefore, as is most naturally suggested from its general outline, it may properly be divided into the foot and heel, including thumb-screw and short levers, and into the legs, body, wings, neck, and arms or blades, as indicated by Figs. 1, 2, 3, 4, and 5.

The description of the foot and heel we will defer until we come to study the principle of action,

I shall consider B the centre of the instrument; the plumb line U, dropped from it, the balancing-point.

The legs, where they leave the heel E and *e* are rounded, a-quarter of an inch in thickness, and for a short distance ascend almost perpendicularly, inclining slightly forward and inward. In the next part of their course they become gradually more and more flattened, extending now almost directly forward, only inclining slightly outward.

The line U indicates their union with the body. Their length is two inches and three-eighths. This part of the instrument applies to the purpose of dilating the vulva or labia majora. The lower part of the legs falls just within the fold formed by the inner part of the thigh and the labia, while the upper portion passes between the latter about the commencement of the nymphæ, and thus reaches the mouth of the vagina, which corresponds exactly with the plumb line U, the balancing-point.

The body is included between the two lines U and Q, and is somewhat quadrangular in shape, rounding on its outer surface, and hollowed out on the inner side to the same extent as the upper part of the leg and the wing standing upon its upper edge, as indicated by the line B Q. This part of the instrument is applied directly to the transverse dilatation of the mouth of the vagina. The wing is of a peculiar shape, and, for the sake of description, may be divided into the lower and inner portion, and the upper and outer portion. The first part presents a rounded surface from right to left, and up toward the projecting angles R *r* looks almost directly forward. These projecting arches are about three-quarters of an inch wide, and at the angles are about one inch above a line drawn across from centre to centre. This part of the wing, with its fellow of the opposite side, gives support to the perinæum, which lies across from one to the other, just as the bridge spans the stream.

The upper and outer portion of the wing looks forward and outward, and is intended to support the buttock. The neck, between the two plumb lines Q, L, is about half an inch in length and width, and, as shown, is the most contracted part of the arms. This point comes just within the mouth of the vagina, and, consequently, prevents painful stretching of the parts here in the expansion of the blades.

The arms or blades form the widest part of the instrument, and are intended to distend and steady the vesico-vaginal septum. They are thin, spoon-shaped, about two inches and three-eighths in length, and at M one and a-half inches wide. On the middle of this line is seen the countersunk head of the rivet which passes through here and gives support on the inside to the extremities of the arch N n, connecting the blades at this point. This arch is four and a-half inches in length, connected in its middle by a hinge-joint O, and about three-quarters of an inch in width. It should be made of steel, and so thin between the joint and extremities as to allow of easy bending in the opening and shutting of the arms. There are two holes near each end, with slits in the upper edge, to encircle the narrow neck of the rivet when in use. This arch may be used or not, as circumstances may require, it being easily slipped off or on. When used, it is intended to elevate and support the upper part of the posterior wall of the vagina, it being the fulfilment of our second indication. It is easily elevated or depressed with the finger, and when in position stands about one inch above the edges of the blades, and on a plane slightly above that of the projecting angles of the wings R r. Nearly the whole of the instrument, as will be seen by reference to the figure, is included within the legs of the right-angled triangle E B C, only the foot, legs, and wings being outside. The circle D R Q S has its centre at B, the centre of the instrument, with a radius of one inch and a-quarter, the length of the line of union between the root of the wing and the body. This circle, as is seen, includes nearly the whole of the wing, the body, and a large part of the leg. This angle and centre of circle, I should observe, are important points to be borne in mind in the manufacture of the instrument. They should be preserved in all cases, it matters not what change may be found necessary, as regards proportions.

The instrument, when set upon a table, has its foot flat upon the surface, touching nowhere else excepting at the point near the ends of the blades, as indicated by the base line of the angle E C, which measures four inches and three-quarters.

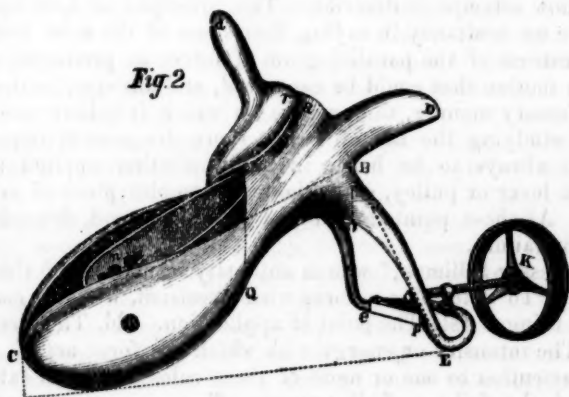
The leg E B measures two inches and three-quarters, and C B four inches and a-half.

From centre B to corresponding point of opposite side, the distance is two inches and a-quarter. Between tips of wings D d, four inches and a-quarter. Between commencement of neck Q, three inches. Between blades at M, measuring from outside to outside, four inches. Between points, measured in the same way, three inches and a-half.

The instrument is to be made of steel, electro-plated, as light as is consistent with the strength required, there being certain points, of course, where this is an important feature; for example, the foot and heel of the instrument.

The *elasticity of flexure*, it should be borne in mind, extends only from the heel to the extremities of the blades, increasing, of course, in extent as the latter points are approached. The limit of elasticity at the points of the blades should not exceed three-quarters of an inch under any amount of resistance here, and this should be borne in mind in *tempering* the instrument, otherwise the limit might be exceeded, and the usefulness of the instrument thereby endangered.

Fig. 2 represents the instrument closed, ready for introduction or withdrawal. It being collapsed, so to speak, every point of the opposing sides is brought into closer relationship. The elevated arch standing above the edges of the arms or blades, as seen in the first view, is now folded within them, the upper part of it resting beneath the hugging arches, R r.



In this view of the instrument, there are three divisions made by the two plumb lines U and Q, which are important, as di-

recting attention to the uses of the respective portions. The leg, for example, included within the first division, performs the part of separating the *labia majora*. The wings and body of the second division elevate the *perinæum*, and open the *mouth of the vagina*, to the utmost limit transversely. The arms or blades of the third division *unfold* and *steady* the *vesico-vaginal septum*, or upper part of the anterior wall of the vagina, and at the same time give support to the two extremities of the arch which spans the space between them, and receives upon its top *the falling posterior wall of the vagina*.

The thumb-screw K is seen reversed to its fullest extent, and the two short levers quietly folded within the foot of the instrument, the point P being now in close proximity to the pivot G.

We come now to a consideration of the principle of the instrument, and, I will state in the outset, as thus applied, it is new and original with myself, it never having been applied before, that I am aware of, by any one, to the purposes of a speculum.

The principle itself, however, is an old one, as regards its application to other purposes. It will be familiar to those who may have seen a certain kind of *cotton press* in the Southern States, in which it is employed, though with a more extensive system of leverage than I have here. I got the idea myself from seeing the above application; and the credit I am entitled to is the modification which I have made of it, to suit the purposes of a *self-retaining* speculum, the principle of which we will now attempt to describe. This principle, as here applied, I have no hesitancy in saying, forms one of the most beautiful illustrations of the parallelogram of forces as producing curvilinear motion that could be conceived, and answers, in the most satisfactory manner, the purpose for which it is here intended.

In studying the law of forces, there are several important points always to be borne in mind, whether applied to the rudest lever or pulley, or to the most complex piece of machinery. As these points are or are not understood, depends success or failure.

Professor Silliman,* who is authority in matters of this sort, says: "To determine a force with precision, we must consider three things: 1st. The point of application. 2d. The direction. 3d. The intensity or energy with which the force acts."

Inattention to one or more of these rules has, I am satisfied, caused the failure of all previous efforts at getting up a *self-*

* Principles of Physic.

retaining speculum, to fulfil all the indications previously named. I am free to confess myself that I failed in many of my efforts from this very cause.

My greatest error I now conceive to have been in the point selected for the application of force. Had I the time and space, it might be interesting to show how I labored to extricate myself from this difficulty; but, as it is, I shall be content for the present with saying that this instrument, as here exhibited, is not the work of a day, or a week, or a month, but years of patient thought and repeated disappointments.

Let us now turn our attention to the diagram, Fig. 3, which is also a half-size front view of what I have denominated the foot of the instrument, here represented closed and expanded, with both legs cut off at the heel E and E.

The two sides E h G together form, as is seen, almost a semi-circle, with a radius of one and a-quarter inches. In the middle, where they unite, is the pivot-joint G, and here is the point of our application of force.

These arms are inflexible, somewhat round, and almost of uniform thickness, not exceeding a quarter of an inch anywhere, excepting at the pivot and ends, where they swell out a little, to give additional strength.

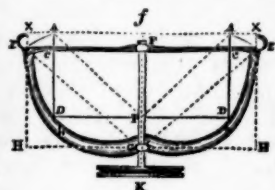


Fig. 3.

Within these arms is situated our plan of leverage for opening and shutting the instrument. This consists of a double-threaded thumb-screw K, about one inch and three-quarters in length, and three-eighths of an inch in thickness, with an open wheel on the outer end, one inch and an-eighth in diameter; and of two short, stout levers, one and a-quarter inches long. These latter are connected at one extremity by a joint at the heel E and E, two and a-half inches from the pivot G. At the other extremity, they are connected together by a joint at P. Rising above, three-eighths of an inch, is to be seen the connecting screw of this joint, expanded, and perforated to receive the extremity of the thumb-screw, upon the extremity of which, on the outside, is placed a small tap. In the same manner, the thumb-screw passes through the connecting pivot-screw G, which is the nut, the former being free to move both forward and backward.

Let the two lines now on each side, A D and P D, represent the instrument closed, A f and P f completing the rectangle or

square. The diagonal P A will then represent the situation and relationship of the two short levers previously described.

To open or expand these arms now to the full extent, we have, as would appear, two forces, A P and A P, acting at an oblique angle, a very great mechanical disadvantage, as will be readily understood, for, "when a force acts upon a body at any other than a right angle, a part of its effect is lost."

The difficulty, however, is overcome, and the accomplishment of our purpose rendered easy, by resolving each of these oblique forces into two, P *f* and A *f*, one parallel and the other perpendicular to the point to be moved. This is effected by revolving the thumb-screw K until it assumes the position of G F, and the short levers that of E F and E F. The latter together now form a straight line—a relationship that places the whole instrument in a state of equilibrium; the weight of the two sides, being equal, is exactly counterpoised at F. Complete now the parallelogram E H G, and we have the diagonal G E, the resultant of the two components thus applied, which give us the diagonal or oblique relationship of the arms of the instrument which is here so beautifully carried out. In this resolution of forces, therefore, our power is seen to pass through the arc of a circle which is the diagonal of the small parallelogram A e, E x, the distance A E being three-eighths of an inch. As it is with the seat of power, so it is with every other part of the instrument to the extremity of its blades, which, with varying radii, passes through the arc of the part of a circle, the length of which, as well as the velocity, increasing with the distance from the pivot G.

For instance, at the centre or balancing-point of the instrument, U, Fig. 1, corresponding to the mouth of the vagina and about one inch from the seat of power, we have the arc increased from three-eighths to half an inch, with a total expansion of the arms at this point of two and a-half inches. And at the extremity of the blades, a distance of about five inches from the same point, the arc is increased to one and a-half inches, giving us a space between the opposing blades of three inches for operative purposes.

At the two points named, the limit of expansion of the blades corresponds exactly with the limit of the dilatation of the mouth of the vagina, and its upper extremity, which alone is sufficient to explain the *self-sustaining* and *self-retaining* feature of the instrument.

In the application of our power then to the thumb-screw K, the position of it is most advantageous for producing its maxi-

mum effect in collapsing or carrying the two short levers from their oblique relationship to that of right angles with the point acted upon, thus affording an example of increased power with increased resistance. The instrument with the above system of leverage may properly be said to represent a *double bent lever*, the most familiar example of which is the *fire-tongs*. Unlike these, however, it has the power applied on the inside instead of the outside. Alike, though, in the important respect of having the power applied between the fulcrum and the weight or resistance, distinguishing both at once as levers of the third class.

This instrument I shall call the *spring and self-retaining speculum*, as is most naturally suggested from these two distinguishing qualities of it.

I think I may justly claim for this speculum originality in:

1st. The system of leverage employed, possessing, as it does, regulated and increased power, reduced to the smallest possible compass, and far away from the mouth of the vagina, thus allowing the freest and widest range of manipulation with instruments, compatible with the nature of these parts.

2d. Transverse action of the instrument, with uniformly varying movement of the working-point, extending from the heel to the point of the blades, thus making the lateral walls of the vagina the seat of pressure instead of the anterior and posterior, as formerly.

3d. Complete exposure, at the same time, for operative purposes of the vulva, both walls of the vagina, and the cervix uteri, with the two polished surfaces of the arms of the instrument standing upon the sides, the most favorable position in which they could be placed to secure the greatest amount of reflected light.

4th. Elasticity of the working-point of the instrument.

5th. Being self-retaining in the fullest sense of the word.

6th. Being equally applicable in its use to all positions of the patient.

7th. Allowing all operations to be done without the aid of assistants, or exposure of the person of the patient, further than the parts immediately brought within the field of observation by the expansion of the arms of the instrument.

All of these points, I am safe in saying, admit of the clearest demonstration.

Remarks.—Having now completed the description of our *spring and self-retaining speculum*, it remains for us to offer a few additional remarks upon its application in practice, and the

circumstances under which it was first done; for it is reasonable to conclude that the question will be asked, where is the proof of all the advantages which have been portrayed at such length?

The only proof I propose to offer, and I think this conclusive, is the application of the instrument in a single case, the very one to which it was adapted in completing it as here shown. This case being an extreme one, as will appear, has the advantage, I think, of rendering the proof convincing to the practical mind, and lessens the necessity, I conceive, of additional corroborative testimony to satisfy even the most skeptical. The case referred to was one of vesico-vaginal fistule, occurring in a very stout, fleshy woman, weighing upwards of two hundred pounds. Early in October last, she was admitted into that admirably conducted institution under the direction of the Sisters of the Hoboken St. Mary's Hospital, where my patients are now received.

The fistule was of six or eight months' standing; small, not larger than a pin's head, and occupied what we would ordinarily term a favorable position, being some three inches above the *meatus urinarius*, and near the edge of the septum, upon the left side.

The peculiarity and difficulties of the case were these: Anteversion of the uterus; a convoluted or folded condition of the two opposing walls of the vagina, which was of immense size; and a pleated condition of the edges of the fistule, and the parts immediately surrounding it.

Assisted by Drs. Finnell, Connolly, Lynch, Metcalfe, and several other medical gentlemen of New York, and Dr. Chabert, of Hoboken, I undertook my usual operation, the patient resting upon her knees and elbows. My fourth size of the lever speculum, with a blade four inches long, one and a-half inches wide at the heel, and one and three-quarter inches near the point, was employed; and, although of such large size, this instrument, with spatulas and depressors, brought to bear from various points by assistants, afforded us only an imperfect view of the very small fistule. The upper part of the posterior wall of the vagina came down in such immense folds over the end of the instrument, met by the same folded and protruded condition of the anterior wall, under violent and almost continuous expulsive efforts, that it became quite impossible to commence the process of paring the edges of the fistule, and to complete it in a regular manner. This stage of the operation, however, was gone through with after the length of time indicated, only

to be followed by a still greater difficulty and delay in the next—the introduction of our sutures—only three being called for. The patient, at this stage of the operation, was placed upon her side and chloroformed, which, however, afforded us no relief from the surrounding difficulties.

Suffice it to say, the operation, after three hours, with five or six assistants, was finished, though in the most unsatisfactory manner it had ever been my misfortune to encounter before.

Now, after all our labor and annoyance, I felt that a failure was inevitable, and so expressed myself to the gentlemen present. The removal of our suture apparatus, on the eighth day, proved too truly the correctness of our misgivings as to the final result. There was a total failure.

With a full understanding now of the difficulties of the case, and seeing the result of the extraordinary efforts which had been made in this operation, I contemplated, I frankly confess, another operation with dread and ill forebodings.

I determined, however, that I would not undertake another until I could devise some plan of securing the patient effectually in the right-angle position upon the knees, which I had had in contemplation for several years; and, if possible, to complete my new speculum, believing that no better case could be found to test its merits. Accordingly, I drew a plan of my *thoracic rest*, alluded to in the former part of this paper, and placed it in the hands of a carpenter, who had it ready for use in five or six days.

As to the speculum, this was not so easily completed, as it involved a radical change in my original plan, arising from a fundamental error in its construction, which I had not discovered until this particular juncture. An explanation of this change would necessarily require a description of the instrument and all the alterations made in it from the beginning, which would far exceed the limits assigned to these remarks in the outset.

On the 20th of November it was so near completed as to enable us to use it.

The patient was now placed in our new position, and thus secured upon the *thoracic rest*. The position was now found to be admirable, and the confinement of the patient perfect.

Chloroform was next administered, and our speculum, as here shown and described, was introduced and expanded to the fullest extent. A reference to the limit pointed out on a former page will give some idea of the enormous size of the vagina. In short, the dilatation of the vagina, regarding all the indica-

tions which we have pointed out, was most complete and satisfactory. The insignificant fistule which we had labored so hard to bring into view a few weeks before and failed, now showed itself in its fullest dimensions, steady and immovable, even in the very face of the most violent expulsive efforts of the patient from bearing down and vomiting, before which we stood almost powerless and helpless in the previous operation, with every assistant that could be employed.

I now viewed the parts of operative procedure, for the first time, with a feeling of certainty as to the result. At my leisure I began the operation, and quietly completed it by my ordinary method, without the aid of an assistant, further than to wash sponges and give chloroform.

In twenty-five minutes our patient was removed from the table and placed in bed, totally unconscious of what had been done. Ten minutes of this time, I should observe, were lost in consequence of a little hemorrhage which had to be controlled before introducing our sutures.

Thus was achieved, I conceive, the greatest triumph of our professional life.

The above operation was done in the presence of Drs. Thos. C. Finnell, Thomas S. Bahan, Joseph S. Crane, of New York, and Dr. Chabert, of Hoboken, all of whom expressed their entire satisfaction at the result.

To Dr. Finnell, I am under many obligations, for having so opportunely placed under my charge the above patient, so well adapted to the completion of our instrument. Without such an opportunity, our success might have been deferred many months longer. There are also due Dr. Chabert, many thanks for his kind attention to the patient during the after treatment.

The result in this case, however satisfactory it may be viewed in the important respects mentioned, merits additional interest, I think, from the fact that the instrument actually employed in the case, and from which these drawings have been made, was completed by my own hands in *gutta percha, sheet lead, and iron wire*. To Messrs. Geo. Tiemann & Co., 67 Chatham St., however, I am under great obligations as regards the foot, leverage, and legs of the instrument, and the many changes and alterations made from time to time, in order to reach this stage of completion. They placed at my disposal an experienced and finished workman, who made and put together almost every part of the instrument above named under my own supervision. Without this very great advantage, I never could have gone through with the work, even to this extent.

As regards the ultimate success of this instrument, from what we have seen thus far in its application, I think I can very confidently recommend it to the general practitioner, as well as the surgeon, as likely to give satisfaction in all cases where a speculum requires to be used.

That a diminution of the size of the instrument shown here will have to be made to suit the majority of cases, I am convinced. This is an extra large size. A medium size, I think, will cover four-fifths of all cases; one smaller size, and a larger one, such as here shown, covering the other fifth of the cases. In this last class, we include such cases as the one above detailed, and all cases with shortening of the vagina, resulting from injury of its walls or otherwise. As soon as we can determine properly the alterations necessary to be made in the proportions of this instrument, in order to reach the other two sizes, we will have them made.

The instrument, when completed in steel and electro-plated, as designed, will not, I am satisfied, exceed the weight of this, our original pattern, which is only eight ounces, being two ounces less than the ordinary lever speculum.

Fifth Avenue Hotel.

ABSTRACT OF A CLINICAL LECTURE ON THE PATHOLOGY AND TREATMENT OF THE TYPHOID STATE IN DIFFERENT DISEASES.

By CHARLES MURCHISON, M.D., F.R.S.,

Physician and Lecturer on the Practice of Medicine at the Middlesex Hospital.

I propose in the present lecture to direct your attention to several cases of disease, widely different in their nature, but in all of which there has been a similar group of symptoms, constituting the condition ordinarily known as the "typhoid state."

Case 1.—William D., aged 23, admitted Oct. 26th, 1866, on the seventh day of an attack of typhus fever, with well-marked eruption; a dry, brown tongue; great delirium and restlessness, and signs of congestion of the lungs. Marked improvement on the fifteenth day. On the eighteenth day, return of the febrile symptoms; an inflammatory swelling over the left parotid, and albumen in the urine. On the nineteenth day, frequent attacks of convulsions, which continued to recur until death by coma on the twentieth day.

After Death.—Blood dark and fluid; great hypostatic congestion of lungs; spleen large and soft; kidneys presenting the characters of a recent acute nephritis. A large quantity of clear fluid, containing urea, beneath the arachnoid, and in the lateral ventricles.

Case 2.—John F., aged 27, admitted Dec. 3, 1866, on the ninth day of an attack of typhus, with well-marked eruption; a dry, brown tongue, and albumenuria. On the thirteenth day, violent delirium, followed by stupor, floccitatio, and involuntary evacuations, which continued until death on the seventeenth day. No convulsions.

After Death.—Blood dark and fluid. Extreme hypostatic congestion of both lungs, the two together weighing sixty-eight ounces. Both kidneys greatly enlarged, weighing together fifteen ounces and a-half, their surfaces smooth, and capsules non-adherent, their cortices extremely congested, and the tubes gorged with granular epithelium. Much clear fluid, in which a considerable quantity of urea was detected, at the base of the brain, and in the lateral ventricles.

Case 3.—John S., aged 44, admitted into the London Fever Hospital, on Oct. 12th, 1863, on the seventh day of an attack of typhus, with copious eruption. On the ninth day, acute delirium, followed by stupor, complete unconsciousness, low muttering delirium, and involuntary motions. On the thirteenth day, urine very scanty and smoky, containing epithelial and blood casts. During the following night, a fit of convulsions, lasting a-quarter of an hour, and death by coma half an hour afterwards.

After Death.—Blood dark and fluid. Extreme hypostatic congestion of the lungs. Spleen large and soft. The two kidneys together weighing fourteen ounces and a-half, their capsules separating readily, and their cortices quite smooth, but very friable, intensely congested, with blood dripping in large quantity from the cut surface; all the uriniferous tubes gorged with opaque granular epithelium, and many of them containing extravasated blood. Much clear fluid in the lateral ventricles and at the base of the brain, which was not examined for urea.

Case 4.—James P., aged 73, admitted Nov. 13th, 1866, with an eruption of pemphigus over the greater part of the body. Many years before he had suffered from "typhus," and from a rheumatic attack, but he had never had dropsy. Two years before, the eruption had appeared on his legs, and within the last three months it had spread over his body. Two or three days after the patient's admission, he became very restless and

delirious at night; his tongue was dry and brown, and coarse moist *rales* could be heard over the back of the lungs; the urine was scanty, but though examined repeatedly, contained not a trace of albumen, and there was no dropsy. Death by coma occurred on November 21st.

After Death.—The blood dark and fluid. The kidneys contracted and granular, their capsules firmly adherent, and their cortices having well-nigh disappeared. Œdema and hypostatic congestion of the lungs. Much clear fluid, containing urea, at the base of the brain, and in the lateral ventricles.

Case 5.—John K., aged 49, admitted Oct. 27, 1866, with a gangrenous ulcer of big toe, the result of an injury, jaundice, and albuminuria. About Nov. 15, the patient became very restless and delirious at night; the tongue was dry and brown; there were signs of hypostatic congestion of the lungs; and the gangrene began to spread up the leg. On Nov. 20th, convulsions occurred, and, after about twenty fits, the patient died comatose on the 21st.

After Death.—The cause of the jaundice was ascertained to have been catarrh of the bile-ducts, from irritation of the calculus. Both kidneys were enlarged, and presented the characters of a contracting fatty kidney. Blood dark and fluid. Marked œdema and hypostatic congestion of both lungs. The fluid in the lateral ventricles, and at the base of the brain, was found to contain urea.

Case 6.—James McW., aged 42, admitted Oct. 15th, 1867, with symptoms of gangrene of the bladder, succeeding those of the passage of a renal calculus. On Oct. 26th, a rigor, followed by fever, with dry, brown tongue, restlessness, and delirium at night, signs of congestion of the base of the lungs, and death, after an attack of convulsions, on Nov. 7th.

After Death.—Gangrene of the bladder; great dilatation of the right ureter. Sacculation of the right kidney, with complete destruction of its secreting tissue; numerous small abscesses in the left kidney. Congestion of the lungs. A considerable quantity of clear serum, containing urea in the lateral ventricles, and at the base of the brain.

Case 7.—Henry P., aged 28, admitted Sep. 13, 1866, with all the ordinary symptoms of rheumatic fever in an intense degree, which had lasted about ten days. There was no cardiac complication. On September 17th, he became suddenly worse; he was heavy and stupid, and could scarcely be roused; the urine was loaded with lithates, but contained no albumen; the tongue was dry and brown; there was now faint pericardial

friction. On the following day he became violently delirious; the temperature was 107° Fahr., and at 5 P.M., he died comatose. An hour before death, the temperature was found by Dr. Murray to be $110^{\circ} 2^{\circ}$ Fahr.; indicating an unusually rapid disintegration, or combustion of tissue.

After Death.—Blood dark and fluid. A thin layer of recent lymph over surface of heart, but only half an ounce of fluid in pericardium. Both lungs exhibited in a marked degree the characters of hypostatic congestion, as seen after death from typhus. Spleen ten and a-half ounces, soft and pulpy, like a "typhus-spleen." Both kidneys enlarged and hyperæmic, weighing together twelve ounces and a-half, but surfaces smooth, and capsules separated readily. No fluid in cerebral ventricles.

In this case the products of tissue-metamorphosis, as indicated by the high temperature, were probably in too large quantity for healthy kidneys to eliminate.

Case 8.—Esther P., aged 26, admitted Nov. 5th, 1867, with febrile symptoms, a dry, brown tongue and violent delirium. She had been ill for five days before admission, and presented all the symptoms usually observed in a bad case of typhus fever; but, on examination, no eruption could be discovered on the skin, and though there was scarcely any cough, there were all the physical signs of pleuro-pneumonia from base to apex of the left lung, and also at the right base; the urine contained a considerable quantity of albumen. For four days the patient seemed to get worse; she had no sleep, was extremely delirious, and was with difficulty kept in bed; but at the end of that time, an improvement commenced, both in the symptoms and in the physical signs of the lungs; the albumen entirely disappeared from the urine, and on the 6th of December, the patient left the hospital well.

In the cases now submitted to your notice, the group of symptoms known as the "typhoid state" was the same, notwithstanding the varying nature of the primary maladies. These symptoms are a quick, soft pulse; a dry, brown tongue; the symptoms and physical signs of hypostatic congestion of the lungs; impairment of the mental faculties; stupor passing into coma; delirium, which at one time is acute and noisy, at another low and muttering, and not unfrequently associated with muscular tremor; involuntary evacuations, and occasionally subsultus, carphology, or even general convulsions. The precise grouping of the symptoms will vary in different cases even of the same disease, while in diseases essentially different it may be identical.

The *post mortem* appearances met with in such cases are a

dark fluid condition of the blood; hypostatic congestion and œdema of the lungs; old disease or recent congestion, with epithelial engorgement of the tubes of the kidneys; enlargement and softening of the spleen, and, unless the typhoid state have been of very short duration, an accumulation of serous fluid in the lateral ventricles and at the base of the brain, the veins and sinuses of which are usually full of dark blood.

The typhoid state is developed more commonly in true typhus fever than in any other disease that we are called upon to treat in this country; and accordingly, all diseases in which the typhoid state is apt to be developed are constantly mistaken for typhus, so that the cases registered in official returns as deaths from "typhus," furnish no reliable test of the prevalence of this epidemic fever. The cases sent as typhus to the London Fever Hospital, and in fact, to all fever hospitals, from year to year, testify unequivocally to the fact that there is scarcely an acute disease to which flesh is heir which may not in the way pointed out be mistaken for typhus. Next to true typhus, enteric, pythogenic, or the so-called "typhoid fever," is the malady in which the typhoid state is oftenest met with; and this is one reason why it was so long, and is still so often, confounded with typhus. In many cases of enteric fever, it is true, the typhoid state does not appear at all, or only late in the disease, and in the latter case the attack is often, though erroneously, described as "gastric fever passing into typhus." Cases of pneumonia are not uncommon where the symptoms of the local disease are completely masked by those of the general blood-poisoning, in the form of manical delirium passing into coma; and there are few medical men who have not met with examples of acute rheumatism passing into a condition indistinguishable from the typhoid state of the typhus, and presenting similar morbid appearances in the solids and fluids after death. Another class of cases very commonly mistaken for typhus is constituted by certain forms of kidney-disease, and particularly the contracted, granular, or "gouty" kidney. In this form of kidney-disease, the patient may at no period of his life have suffered from dropsy, and the urine may contain only a minute trace of albumen; or, as in Case 4, even none at all. The symptoms ordinarily associated with one's ideas of kidney-disease are absent, and, therefore, when cerebral symptoms supervene, the primary disease is overlooked, and the case is regarded as one of typhus; or, if the attack be sudden or ushered in with convulsions, as one of apoplexy. The "serous apoplexy" of the pathologists of the past age—cases diagnosed as apoplexy during life, but where no apoplectic

clot was found in the brain after death—were probably, for the most part, examples of contracted kidney. As physician to the London Fever Hospital, numerous cases of contracted kidney have come under my notice during the last six years in which the cerebral symptoms—the typhoid state—were indistinguishable from those of typhus, and where, failing in any previous history, the only points of distinguishing from typhus have been the absence of any eruption on the skin, and the fact that the temperature has been but little elevated above the healthy standard, except when some local inflammation has complicated the primary disease in the kidney.

I shall now endeavor to explain to you why it is that a similar state of the system is so often produced in the course of diseases so widely different, and to show, in fact, that the pathology of the “typhoid state” in all diseases is probably identical, whatever be the cause of the primary disease.

To take, first, the cases of contracted kidney, it is now generally admitted that the cerebral symptoms are due to a poisoned condition of the blood. There may be differences of opinion as to whether the actual poison is urea or some compound of ammonia; but for our present purpose it is immaterial to inquire which of these views is the more probable. It is sufficient to know that the blood is poisoned with the products of the retrograde metamorphosis of the nitrogenous tissues, which it is the function of the kidneys to eliminate from the body. The destruction of tissue is not increased beyond the standard of health, but the disease of the kidneys renders them incapable of separating from the blood the normal quantity of the products of that metamorphosis.

Take next, the class of febrile diseases. It is well known that convulsions—a symptom characteristic of an extreme degree of the typhoid state—is not uncommon in scarlatina, and it has long been acknowledged that this symptom is independent of any cerebral lesion, but is due to poisoning of the blood in consequence of inflammation of the kidneys. Convulsions, however, are met with in many other febrile diseases besides scarlatina, I have known them occur in typhus fever a hundred times or more, and I have published evidence to prove that their pathology in typhus is the same as in scarlet fever. The urine contains always more or less albumen; the kidneys after death exhibit traces of disease, old or recent; and in not a few instances (as in Case 1) I have discovered urea in the fluid of the cerebral ventricles. But convulsions, under such circumstances, are only an extreme symptom of the typhoid state. In a large

proportion of cases of typhus, even where no convulsions occur, albumen is present in the urine during the second week of the disease where cerebral symptoms are most apt to appear; and in several cases where death has been preceded for some time by the typhoid state, but not by convulsions, I have found (as in Case 2) urea in the cerebral fluid.

And if this be the pathology of the typhoid state in scarlet fever and typhus, it may fairly be inferred that the typhoid state in all febrile diseases, whether they be due, in the first instance, to a specific poison or to a local inflammation, admits of a similar explanation. As in the contracted kidney, the blood is contaminated with the products of tissue metamorphosis, but the cause of contamination is different. It is now well known that in all febrile disease the disintegration or combustion of the tissue is greatly increased beyond the healthy standard. To this is to be ascribed the increased temperature, which is the pathognomonic symptom of the febrile state, and the rapid emaciation. The products of this increased metamorphosis are mainly eliminated by the kidneys, and appear in the urine. As long as the kidneys are equal to the increased work thrown upon them, the blood is properly depurated, and the typhoid state is warded off. But if the kidneys be unequal to the task, either from the large amount of effete material to be eliminated, from previous disease in the secreting tissue, or from congestion resulting (as it often does) from their increased work, then the blood becomes contaminated, and convulsions or the typhoid state supervene. This explains why albumen so commonly appears in the urine in the course of all acute diseases of a severe form, and why it is so justly regarded as an unfavorable symptom. It also explains why albuminuria is looked upon as a contraindication to any serious surgical operation. The surgical fever which follows an operation is attended by an increased metamorphosis of tissue; and if the kidneys be diseased, the products of the metamorphosis will be retained in the blood, and induce the typhoid state with all its dangers.

If the views now submitted to you as to the pathology of the typhoid state be correct, they furnish material for reflection as to its appropriate treatment. This ought to be directed towards depuration of the blood of the products of tissue metamorphosis, avoiding, at the same time all measures which will irritate the kidneys, and interfere still more with their secreting functions. At the present day, existence of the typhoid state is usually regarded as in itself an indication for liberal administration of alcoholic stimulants. Considerable experience of the typhoid

state in all diseases has induced me to doubt the wisdom of the practice, and from an experimental inquiry at the London Fever Hospital, in which the patients admitted with typhus fever on alternate days have been treated with and without alcoholic stimulants, I am satisfied that the benefits of late years ascribed to alcohol in the typhoid state have, to say the least, been greatly overrated. Before drawing conclusions as to the good effects of alcohol in typhus, it is necessary to watch the course of the disease where no alcohol has been given, and this precaution has too often been overlooked. At the same time you must not go away with the impression that stimulants, in moderation, are injurious in all cases where the typhoid state is present. Not unfrequently this condition is accompanied by great impairment of the heart's action, indicated by extreme weakness or irregularity of the radial pulse, a diminution of the cardiac impulse, and weakness with shortening of the first sound. Under such circumstances, stimulants in moderate quantity are unquestionably of use. It is the indiscriminate administration of large quantities of brandy in all cases of the typhoid state that I am induced to condemn, both from theory and from practical experience. Such a practice, it appears to me, is calculated to prove injurious by irritating the kidneys, and thus impeding the elimination of the products of tissue-metamorphosis with which the blood is contaminated. The administration of stimulants must be regulated by the condition of the pulse and heart, and not by the mere existence of the typhoid state.—*Brit. Med. Jour. Jan. 4, 1868.—Med. News & Library.*

INFANTILE CONVULSIONS.

By JOHN DICKSON, M.D.

Read before the Baltimore Medical Association.

Of all the maladies of infancy, I know of none more serious, or embarrassing to treat, than convulsions. We are summoned in great haste, and arrive out of breath, and find a painful scene of dismay and confusion which requires our utmost tact and composure to lull. We never get *used* to spasms in the sense in which we may become stoically or philosophically calm. The malady is too grave and sudden in its effects, and our responsibility too serious for that. We all know that two or three minutes of tonic spasm, or a few hours of clonic, may destroy life, and how much depends upon the prompt and judicious

action of the physician, both for the child's safety and his own reputation. Unless the case occurs in our own family, or has been attended with premonitory symptoms, we rarely see a spasm in the tonic stage. The violent and sustained contraction of the respiratory muscle stops the breathing, and death results in a few minutes from asphyxia, as in the first stage of epileptic fits, or in fatal cases of laryngismus stridulus. This, fortunately, is a rare occurrence. We generally find the state, which soon succeeds, of alternate retraction and relaxation, either general or partial; and sometimes confined to very few muscles, as those of the face or hand. In severe cases there is violent jerking of the limbs, abduction of the thumbs covered by the contracted fingers, staring or rolling, insensible eyes, with pupils either contracted or dilated, or there is strabismus in the course of the spasm; the head is drawn backward or forward from the beginning, or it is twisted in rotatory movements; the respiration is quick and irregular, producing a sound of choking as distressing to hear as the contracted, livid face is to witness. When clonic spasm continues some hours, and the rapid contraction and relaxation prevent the free egress of the carbonized air from within the lungs, or the admission of enough pure air to renew the blood, both circulation and respiration are arrested, and death must follow.

Even when this is not the immediate result of the spasm, in many instances it occurs within a short time after it subsides, because these vital functions have been so seriously impaired as to preclude respiration, and the patient sinks from the shock—as we have heard mothers expressly say, “they were struck with death from the beginning of the attack.”

But, happily, this is not the most common course of convulsions. There is oftener a gradual subsidence of the fit. The spasmodic movements become slower and cease, the respiration is free, and a general calm succeeds. The patient either wakes to consciousness, or falls into a comatose, or, it may be, natural sleep, after which there may or may not be a recurrence of the spasms. Such recurrences are very common, in spite of our best efforts to prevent them, but it is gratifying to know that the danger is not proportionally increased by their frequency. I have seen children have six or seven in the course of the day, and on the following day present no unfavorable symptom or spasm ever afterwards.

Partial spasms present such a variety of forms that I shall not attempt to speak of more than one or two. They may be confined to the superficial muscles only, and to a few of these,

and in such cases, the senses remain intact. I have seen the eye, mouth, and hand of one side jerking, while the sensibility of the child was perfect; and it would ask for milk and drink it, attempting to hold the cup with the convulsed hand and steadying it with the other. Such are the sequelæ of the more severe attacks, and are easily excited in children so predisposed. Sometimes the muscles of the neck are alone effected, and cause rotation or flexion of the head forward or backward. Indeed, single muscles, as well as sets of muscles, in almost every part of the body, may be convulsed, or exhibit movements under peculiar excitement, nervous or fibrile, which closely resemble spasm, and are at times mistaken for such. Certain organs alone may be effected, as the larynx or glottis, and we have a very formidable trouble in laryngismus stridulus. A child may be seized without any premonitory symptoms of dangerous import, with apparent suffocation. His breathing is suspended, his head thrown back, face and lips livid, and, in a few seconds, the spasm yielding, respiration follows, and a sudden gasp for breath, so urgent as to produce a crowing sound; and the breathing goes on naturally. But there are cases so violent from the repetition of these spasms, as to destroy life during the paroxysm, or lead to general convulsions and coma. Marshall Hall calls this affection "an excitation of the true spinal or excito-motory system." It originates in the trifacial in teething; in the pneumogastric in over or improperly fed infants; in the spinal nerves in constipation, intestinal disorder or catharsis. These act through the medium of the spinal marrow, and the inferior or recurrent laryngeal, the constrictor of the larynx, and the intercostals and diaphragmatic, the motors of respiration." We can judge from this that a great variety of causes, as in general convulsions, may produce this form of spasm. Dr. West mentions a case in a child only ten weeks old, from improper feeding; another, of nineteen months, from sudden suppression of chronic diarrhœa; another, of two and a-half years, from cerebral congestion following constipation; another, of nine months, during the course of chronic hydrocephalus; and in another, who died at the age of two months, it appeared as a transitory symptom during a series of convulsive attacks, for which no cause could be assigned during life, and which left no traces that could be detected after death.

The obscurity of origin and absence of pathological indications often throw a veil of mystery over cases of convulsion, which the clearest sighted of us cannot penetrate. We know that hereditary influence is the most frequent predisposing cause,

that eclampsia in the mother before parturition, or much further back, when she was herself a child, is apt to be followed by the same tendency in the offspring; though it by no means follows so often as to establish it as a rule.

A remarkable illustration of hereditary influence is quoted by Trousseau from a thesis of Dr. Duclos, of Tours. The case is that of a woman, thirty-four years of age, who had had frequent attacks of eclampsia up to the age of seven. These had left behind slight deviation of the mouth and ptosis of the left upper eyelid. This woman had ten children, who all had convulsions; six had died, five in the first two years, and one when three years old. Three months previously, she had a first attack, which lasted about ten minutes, and which her mother ascribed to her having given the breast to the child immediately after a fit of passion, as the convulsion occurred on the ensuing day. Death took place three months afterward, from cerebro-meningitis.

Loss of blood, whether in direct hæmorrhage, venesection, diarrhœa, or hypercatharsis, strongly predisposes to convulsions. Insufficient nourishment and exhaustion, from whatever cause, have the same effect. Hippocrates' observation that the "blood is the moderator of the nerves," corresponds with the present physiological law, "that in proportion as the nutritive and vegetative functions are feeble and languishing, nervous phenomena are mobile, exalted and irregular." The sensitive brain, with its spirit-like nerves prevailing every part of the organism, must be supported by the vascular system, as the string and wind instruments of an orchestra combine; the measured wave sounds of the latter, giving volume and tone to the tender strains of the former, without which it would be only a flutter of distracting discord. The iron of the blood is as much a fundamental base in toning the system, as the brass instruments are in sustained musical harmony. It may be upon this theory that Chapman uses ice bags along the spine in so many affections where nervous symptoms predominate. "He considers that ice applied along the spine increases the general circulation, stops the cramp of voluntary and involuntary muscles, proves an effective remedy in epilepsy and other convulsive affections, cures sea-sickness, restrains the sickness of pregnancy, arrests diarrhœa, recovers patients from the cold stage of cholera, and, finally, promotes menstruation. On the other hand, heat along the spine lessens the general circulation, overcomes congestion in all parts of the body, lessens fever, restrains hæmorrhage and lessens or arrests the menstrual flow." If by exciting or depressing the spinal cord, by heat or cold, such

remarkable effects can be produced upon the circulatory system, we can readily see how disorders of the latter may prove disastrous to the nervous system. To work out this would be very interesting, but would require more time than I can give it. The fact is, that every thing that impedes or arrests healthy circulation, or impairs the quality or quantity of the blood, may tend to bring on convulsions, and may be ranked among the predisposing causes. The exciting causes of convulsions are very numerous, and upon them, when we can discover them, we base our immediate treatment of an attack. When arising from indigestion, how often have we cut short the spasm by an emetic or enema, when nature herself has not done the work for us, which she frequently does, and when constipation is the cause by relaxing the sphincter and evacuating the loaded intestines. But these measures often fail, and in spite of the inevitable warm bath and counter-irritation, which the child's friends have applied before our arrival, the convulsion goes on unabated; and if we do not arrest it, the child may die in the fit or from the supervening coma. Almost all the antispasmodics have been used for this purpose, and some of them with good effect at times, but no agent is so powerful or requires more skill in administering than chloroform. Some bear it very badly, and we discover the flagging of the pulse or the stertor of the breathing very soon after its application, and we must desist before any good can be done by it. In other cases its use may be kept up for a long time with no bad effects, and the convulsive action controlled. In severe cases I have seen the chloroform used freely for several hours, and the child recovered perfectly, when without it the paroxysm would have undoubtedly exhausted the nervous system, or produced cerebro-meningitis, or effusion and resulting paralysis. Such are often the results of convulsions, besides deformities from rupture of muscles, squinting, nervous excitability, epilepsy, etc., though by no means occurring in a large proportion of cases. In some children convulsions are easily excited and readily controlled, and the agent which I have found most valuable for this purpose is bromide of potassium. There is still a good deal of skepticism on this point, but I think where it has been used and persisted in, there is no doubt of its efficacy in preventing and subduing nervous excitability. I have given it, when the convulsive tendency was the result of impoverished blood from previous disease, in conjunction with wine and beef essence, with the happiest effect.

Of the effect of ice to the spine I have no testimony of my own. Dr. Edmunds, in the *Medical Times* of March 12th, 1864,

after relating a case of spasm in a woman which was perfectly relieved by this means, says: "I had seen Dr. Chapman's brochure on the subject of his discovery, and also his paper in the *Medical Times and Gazette*, but thought the idea too pretty to be anything more than a plausible theory, until my own child, being in great danger from an obstinate laryngismus, connected with dentition, I tried the ice bag to the cervico-dorsal portion of the spine, at the suggestion of Dr. Ramskill, and it has certainly done more to keep off the strangling attacks than anything else.

Lancing the gums when the convulsions occur during dentition, sometimes produces immediate relief, and, if they occur during that period, it should be our first duty.

Convulsions which take place at the outset of fevers, from the first impression of the poison upon the system, are not as serious as those which come on towards the close, and seldom require special treatment. It is a disputed point whether the prognosis from such is favorable or not. Worms, sunstroke, extremes of temperature, blows upon the head, sudden fright, severe burns, and local irritation of various kinds, are among the exciting causes of convulsions, and indicate the course of treatment. Calomel has been given very largely in convulsions, as a purgative, anthelmintic and absorbent. We must bear in mind its destructive tendency, and have a distinct purpose in view, the accomplishment of which is paramount to the risk of using such a depleting agent. If we give it to promote absorption of effused serum in the brain we may obviate its injurious effects and increase its efficiency by taking especial pains to nourish and support the general system at the same time, with all the means the patient will bear.

This plan was successful in my own little girl, who was two and a-half years old when she was attacked with a violent convulsion, after a day or two of gastric irritation, from which she seemed to be recovering, when, without any warning, she was seized with it, and, in spite of chloroform and everything else we could do for her, it lasted five and a-half hours. The right side was most effected, and, after the convulsion, remained paralyzed for several days, but recovered under the use of small doses of calomel combined with bromide of potassium, and wine, milk, and beef essence. There was a convulsive state for some weeks afterward, which seemed to be controlled by the bromide, and partial convulsions occurred without loss of consciousness, for some days after her recovery from the comatose condition which immediately followed the convulsion. The paralysis left

the foot first, and she could walk well for some days before she could hold anything in her hand, but that gradually regained its use, and lastly, her tongue, which had remained silent for four weeks, began to liberate itself, in monosyllables at first, and she slowly recovered her vocabulary, as if she had never talked before. This case, which I had hoped to give more in detail, was one of intense interest and anxiety to me, and the care and responsibility of the treatment was most kindly and faithfully shared by our worthy president (Dr. Williams). She is held up in our neighborhood as a trial of medical skill, and an encouragement to parents, as well as doctors, to hope for the recovery of their little ones under the most discouraging circumstances.

BRUNETTI'S METHOD OF PREPARING AND PRESERVING ANATOMICAL SPECIMENS.

The Paris correspondent of the Vienna "*Med. Presse*" (Sept. 1, 1867) speaks in the highest terms of praise of Prof. Brunetti's important invention of a mode of preparing anatomical specimens of great durability, which will exert a large influence upon the respective branches of medical study and education. The principal characteristic of Brunetti's preparations, says the correspondent, is certainly their astounding lightness; their color is usually light-grey or white; [the first trials of the method produced darker, more brownish specimens]. All the membranous formations and walls have acquired such a degree of dryness and rigidity that all preparations are preserved in their primitive form and in their individual topographical relations—one of those circumstances which prove and secure their scientific value. All bloodvessels, very distinctly visible in sections, are wide open; all, even the smallest and finest distributions of vessels, as well as the pulmonary vesicles, are clearly and prettily defined. The uriniferous tubes of the kidney and the glandular orifices in all parts of the intestinal canal, etc., etc., can be observed with facility, and thus an accurate image can be obtained, with a magnifying power of only 40-60, of the minute composition and intimate structure of organs. If a higher power is to be used, however, the objects should be rendered transparent by imbibition of water or glycerine, and as strongly illuminated by transmitted light as possible. . . .

What more especially facilitates the microscopical examination of the oldest, very dry preparations, is the fact that they are

most excellently adapted to the cutting of very fine sections, and pretty large sections can thus be made without too great difficulty. No other sort of recent or preserved anatomical specimens affords this advantage in so great a degree; so that it is probable that by the aid of Brunetti's preparations the study of the architectonic composition and arrangement of the individual anatomical elements of each organ can be essentially advanced and brought to greater perfection.

Even in the study of topographical anatomy these preparations may be of much use, as all parts are mummified *living*, as it were, and most of the characteristics pertaining to them during life are preserved. Sections can be made in any direction, at all points, and the cut surfaces remain unaltered for an indefinite time. Moreover, all preparations from whatever region or organ are completely devoid of odor. . . . Excepting a very few fine and delicate specimens, they need not be handled with very great care, and most of them are sufficiently protected from breakage or other injurious influences, as pressure, blows, falls, etc., by their elasticity.

A Paris letter of the *N. Y. Times* (*N. Y. Medical Journal*, Oct. 1867) says, in reference to this invention: Here are specimens of healthy and diseased liver, of healthy and diseased lung, of healthy and diseased kidney—in fact, of healthy and diseased tissue from all parts of the body. In the lung we see specimens of interstitial granulations, of tubercles, and of cavities after abscesses. All this is so plain that a child might learn how the lung looks in the various diseased states to which it is subject. So, too, there are slices of liver and kidney showing fatty degeneration and cirrhosis of the first, and Bright's disease of the latter.

The process of Dr. Brunetti comprises several operations—viz.: 1, the washing of the piece to be preserved; 2, the *degraisage*, or eating away of the fatty matter; 3, the tanning; and 4, the desiccation.

1. To wash the piece M. Brunetti passes a current of pure water through the bloodvessels, and the various excretory canals, and then he washes the water out by a current of alcohol.

2. For destroying the fat he follows the alcohol with ether, which he pushes, of course, through the same bloodvessels and excretory ducts. This part of the operation lasts some hours. The ether penetrates the interstices of the flesh, and dissolves all the fat. The piece, at this point of the process, may be preserved any length of time desired, plunged in ether, before proceeding to the final operations.

3. For the tanning process M. Brunetti dissolves tannin in boiling distilled water, and then, after washing the ether out of the vessels with distilled water, he throws this solution in.

4. For the drying process, Dr. Brunetti places the pieces in a vase with a double bottom filled with boiling water, and he fills the places of the preceding liquids with warm, dry air. By the aid of a reservoir, in which air is compressed to about two atmospheres, and which communicates by a stop-cock and a system of tubes, first to a vase containing chloride of calcium, then with another heated, then with the vessels and excretory ducts of the anatomical piece in course of preparation, he establishes a gaseous current which expels in a very little time all the fluids. The operation is now finished.

The piece remains supple, light, preserves its size, its normal relations, its solid histological elements, for there are no longer any fluids in it. It may be handled without fear, and will last indefinitely. A similar, more easily executed, but probably much less advantageous process has been invented by M. Von Vetter, and is published in the *Chemical News* (in *Dental Cosmos*, Nov. 27): Add to 7 parts of glycerine at 22 deg. 1 part of raw brown sugar and half a part of nitre, till a slight deposit is formed at the bottom of the vessel. The portion required to be preserved is then plunged, dried or not dried, and left in the mixture for a time proportional to its dimensions; a hand, for example, should remain eight days in the liquid; when it is taken out it is as stiff as a piece of wood, but if it be suspended in a dry and warm place the muscles and articulation recover their suppleness.—*St. Louis Med. & Surg. Journal.*

THE VASOMOTOR NERVES OF THE PIA MATER AND BRAIN.

By DR. H. NOTHNAGEL,

Assist.-Physician to the Medical Policlinic at Königsberg, Prussia.

[Virchow's Archiv. XL., 203. 1867.]

New experimental investigations (on rabbits) have led the author to these results:

(1.) The vasomotor nerve-fibres for the vessels of the pia mater partly belong to the ganglionic chain of the cervical part of the sympathetic.

(2.) Another, perhaps more considerable part, of them enter the superior cervical ganglion.

(3.) Some take a course above this ganglion even, very probably in cerebral nerves.

The same results can safely be predicated of the vessels of the cerebral substance itself, though direct observation is here impossible.

These vivisectional experiments have further shown, that violent irritations (electrical or mechanical) of sensory nerves cause contraction in the arteries of the pia mater. A rabbit having been trephined and the dura mater removed, if the metallic electrodes of a strong inductive apparatus be placed upon the thigh at points corresponding to the course of the crural nerve, a distinct contraction of the arteries of the pia mater will be observed, which will continue for a few minutes after the removal of the electrodes, and gradually pass into dilatation. Undoubtedly this contraction of the arteries is of reflex nature. The excitation is transferred, in the medulla oblongata, to the vasomotor nerves of the head. Partial interruption of the courses of the latter, as far as that is possible, diminishes the effect of the irritation to a minimum. Severe mechanical irritation of the leg had the same effect.

This reflex contraction of the cerebral vessels is of importance in the analysis of the mechanism of the epileptic attack. Lately the opinion has gained ground, that a spasm of the cerebral arteries is the first link in the chain of phenomena constituting an epileptic or eclamptic paroxysm; this spasm causes anæmia of the brain, upon which depend the convulsions and coma (Kussmaul and Tenner, Brown-Séquard, Reynolds). Now it is certain, that there are cases of epilepsy that can safely be designated as "reflex epilepsy"—cases in which the disease arose from an injury or the like. The reflex origin of the convulsions is still more extended as concerns "acute epilepsy": eclampsia; (eclamptic attack of children in teething, from presence of worms, etc.) The author's experiments may perhaps throw some light upon this form of the disease. For if the above idea of the causation of epileptic attacks be correct, we must assume that in reflex epilepsy a contraction of the cerebral vessels takes place upon a peripheric sensory irritation. The experiments have actually demonstrated the occurrence of this reflex contraction of the arteries of the brain.—*St. Louis Med. & Surg. Jour.*

BLOOD-CORPUSCLES IN CHLOROSIS.—M. Duncan, of St. Petersburg, has just pointed out the remarkable fact that the blood-discs of chlorotic persons yield up their coloring matter more easily than do those of healthy subjects.

Editorial.

ANNUAL MEETING OF THE ILLINOIS STATE MEDICAL SOCIETY.—The next regular Annual Meeting of the Illinois State Medical Society will be held in the City of Quincy, on the *Third Tuesday* in May, 1868.

SUMMER COURSE IN CHICAGO MEDICAL COLLEGE.—The regular Summer Course of Instruction in Chicago Medical College, will commence on Monday, March 9th, and continue until the first of July. The course will be so arranged as to consist of one clinic and two lectures each day; the lectures to consist, in part, of thorough examinations of each member of the class. Those participating in this course, will be as follows:

Clinical Medicine—Prof. N. S. DAVIS,
Clinical Surgery—Prof. E. ANDREWS,
Obstetrics and Diseases of Women—Dr. E. O. F. ROLER,
Physiology and Histology—Prof. D. J. NELSON,
Anatomy, Descriptive—Prof. J. S. JEWELL,
Operations in Surgery—Prof. R. N. ISHAM,
Materia Medica—Prof. M. O. HEYDOCK,
Physical Diagnosis—Dr. S. A. MCWILLIAMS,
Ophthalmoscope and Ophthalmology—Prof. E. ANDREWS.
Organic Chemistry applied to the Study of Special Pathology—Prof. N. S. DAVIS.

The above course of instruction is free to all the regular matriculants of the College.

VALEDICTORY LECTURE.—We have received a manuscript copy of Dr. J. S. Hildreth's closing lecture to his clinical course of instruction on Diseases of the Eye and Ear, in the County Hospital. It was a lecture replete with earnest thought, and judicious counsel to his class; but it was received too late for insertion in the present number of the EXAMINER.

EXPLANATION.—We have received a number of valuable books, the notices of which were crowded out by the length of

the article relating to Dr. Bozeman's speculum. Among these works, is a large and important work by Stellway, on Diseases of the Eye, from the publishing house of Wm. Wood & Co., of New York. For sale by W. B. Keen & Co., Chicago.

PHYSICIAN'S DAILY POCKET RECORD.—We have received from the author, Dr. S. W. Butler, of Philadelphia, an excellent copy of this work. It possesses all the conveniences afforded by any of the other "Pocket Memoranda" or "Physicians' Visiting Lists," and some that are not found in the others. We commend it to the patronage of the profession.

DR. BOZEMAN'S SPECULUM.—Among the selected articles in this number of the EXAMINER, is one from the *New York Medical Record*, giving an account of a new and improved vaginal speculum. It has been used by its author in several operations for vesico-vaginal fistula, and with the most satisfactory results.

MEDICAL ADVERTISING.

To the Editor of the *Medical Examiner*—SIR:—Wishing to correct any misunderstanding which may occur from the article in your February No., entitled "Give an Inch and an Ell is Taken," we respectfully request the publication of the following:

Having decided to devote ourselves exclusively to the treatment of diseases of the genito-urinary organs, we called on several members of the profession and faculties of the medical schools of this city, explaining to them our business, and, also, our intention of bringing it before the public through the medium of the *papers*, by the insertion of a card, as well as by the ordinary business card, and with this express understanding obtained all the names we used as references, some of whom have since requested us to suspend the further publication of their names in the newspapers; but none have forbidden their use on our business card. The appearance of our card in the "Medical Column," as referred to, was contrary to our intention or desire, but, at the time, beyond our control.

Respectfully,

DRS. BROWN & HIGGINS.

Feb. 15, 1868.

119 Clark St., Chicago.

MORTALITY REPORT FOR THE MONTH OF JANUARY:—

CAUSES OF DEATH.

Accident, concussion of brain	1	Eclampsia	1	Meningitis	3
Accident, poison	1	Encephalitis	2	" cereb.-spinal	4
Accident, burns	2	Enteritis	2	" tuberculous	1
Accident, fall	1	Enteritis, chronic	1	Myelitis	2
Accident, suffocation	1	Encephalus, general	1	Nutrition, impaired	1
Anæmia	1	Fever, intermittent	1	Nephritis	1
Angina	1	Fever, puerperal	2	Old Age	4
Apoplexy	3	Fever, remittent	1	Oesophagus, stricture	1
Bowels, inflammation	5	Fever, scarlet	7	Occipital bone, depression of	1
Brain, congestion of	5	Fever, typhoid	14	Paralysis	2
Brain, dropsy of	1	Gastritis	3	Pericarditis	1
Brain, disease of	1	Gangrene	1	Peritonitis	3
Brain, inflammation	2	Gangrene, leg	1	Phthisis pulmonalis	38
Bright's disease	2	Gout, rheumatic	1	Poisoned	1
Bronchitis	9	Glands of neck, inflammation of	1	Pleurisy	2
Bronchitis, capillary	2	Heart, disease of	13	Pneumonia	49
Cancer	2	Hemiplegia	1	Small-pox	39
Cancer of breast	1	Hepatitis	1	Spine, disease of	1
Cancer of uterus	2	Hernia	1	Stomach, disease of	1
Canker sore mouth	1	Hydrocephalus	9	Suicide	3
Convulsions	51	Indigestion	1	Syncope	1
Croup	8	Inanition	2	Syphilis	2
Cyanosis	1	Intemperance	4	Tabs mesenterica	7
Cyanche trachealis	1	Intestines, perforation	1	Teething	6
Cyanche maligna	1	Jaundice	1	Throat, malformation	1
Cerebellum, disease of	1	Kidneys, inflammation	2	Uremia	1
Debility	4	Laryngitis	5	Uterus, hemorrhage of	1
Diarrhoea	3	Liver, fatty enlargem't	1	Varioloid	1
Diphtheria	21	Liver, congestion of	1	Whooping-cough	3
Dropsy	1	Lungs, congestion of	9	Unknown	3
Dropsy, abdomen	1	Lungs, hemorrhage of	1	Still and Premature births	39
Dysentery	2	Measles	21		

Total 438

Deaths in January, 1868, 438 | Deaths in January, 1867, 299 | Increase, 139

Deaths in December, 1867, 409 | Increase, 29

AGES.

Under 5	252	40 to 50	28	90 to 100	1
5 to 10	20	50 to 60	7	100 to 110	0
10 to 20	14	60 to 70	17	Unknown	0
20 to 30	38	70 to 80	11		
30 to 40	47	80 to 90	3	Total	438
Males,	224	Females,	214	Total,	438

NATIVITY.

Chicago	191	Germany	48	Russia	1
Other parts U. S.	101	Holland	2	Scotland	4
Australia	1	Ireland	46	Sandwich Islands	1
Belgium	0	Italy	0	Sweden	2
Bohemia	5	Norway	14	Switzerland	1
Canada	7	Nova Scotia	0	Wales	0
Denmark	0	Prussia	4	Unknown	2
England	7	Poland	0		
France	3			Total	438

MORTALITY BY WARDS FOR THE MONTH.

Ward.	Mortality.	Pop. in 1866.	One death in	Ward.	Mortality.	Pop. in 1866.	One death in
1---	8	9,668	1,208 1-2	14---	27	12,108	448 12-27
2---	16	12,985	811 9-16	15---	39	15,766	404 1-4
3---	24	15,738	655 9-12	16---	28	14,912	573 7-13
4---	32	10,884	380 1-8	County hosp.,	7		
5---	18	9,610	536 1-9	Armory,	1		
6---	27	10,680	391 7-9	Bridewell,	1		
7---	35	18,755	538 5-35	Home of the			
8---	23	10,429	453 10-23	Friendl's,	0		
9---	33	13,940	422 14-33	Marine hos.,	2		
10---	18	11,416	634 2-9	Mercy hos.,	2		
11---	36	12,924	359	St. Luke's hos.	3		
12---	32	12,695	396 2-3	St. Jose. asyl.	16		
13---	13	8,188	629 11-13	Lake Hosp.,	5		

Total,-----401

DEATHS BY SMALL-POX.

	Jan., 1868.	Week ending Feb. 1, 1868.
3d Ward -----	1	0
4th Ward -----	5	0
5th Ward -----	6	5
6th Ward -----	3	1
7th Ward -----	6	3
8th Ward -----	5	0
9th Ward -----	1	1
10th Ward -----	0	1
11th Ward -----	3	2
12th Ward -----	3	0
14th Ward -----	1	0
15th Ward -----	1	1
16th Ward -----	1	0
Lake Hospital, -----	3	1
Total -----	39	15

TWO PHYSICIANS.—His attempts to extend a more advanced knowledge of his specialty to physicians already in practice having been so favorably commented upon by those of the profession who have attended the previous courses, and by the medical press. **PROF. HORATIO B. STORER,** Will deliver his third private course of twelve Lectures upon the

TREATMENT OF THE SURGICAL DISEASES OF WOMEN,

During the first fortnight of June, at his rooms in Boston.

Fee \$50; and Diploma required to be shown. Certificates of attendance upon the courses already completed have been issued to the following gentlemen: Drs. J. B. Walker, Union, Me.; Alexander J. Stone, Augusta, Me.; Daniel Mann, Pelham, N.H.; Augustus Harris, Colebrook, N.H.; J. W. Parsons, Portsmouth, N.H.; E. F. Upham, West Randolph, Vt.; G. E. Bullard, Blackstone, Mass.; J. A. McDonough, Boston, Mass.; J. G. Pinkham, Cambridge, Mass.; James Coolidge, Athol, Mass.; Thomas G. Potter, Providence, R.I.; C. M. Carleton, Norwich, Conn.; I. Farrar, Hartford, Conn.; M. C. Talbott, Warren, Pa.; H. Gerould, Erie, Pa.; W. W. Bancroft, Granville, Ohio; A. I. Beach, Bellville, Ohio; Henry E. Paine, Dixon, Ill.; W. L. Wells, Howell, Mich.; and W. A. I. Case, Hamilton, C.W.

Hotel Pelham, Boston, January, 1868.

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MONEY RECEIPTS TO FEB. 24TH.—Drs. V. L. Harlbut, \$3; W. Fleming, 3; J. S. Sherman, 3; Theodore Hoffman, 3; J. Haller, 3; M. Shephard, 3; W. H. Baxter, 5; H. W. Pickett, 3; J. Good, 3; E. Young, 6; L. Corey, 3; M. Parker, 3; G. W. P. Hadder, 3; W. A. Barstow, 3; H. A. Stokes, 3; John Ten Brook, 5; W. M. Landon, 6; H. C. Lester, 3.

NUMBER OF EMIGRANTS WHO HAVE ARRIVED IN NEW YORK DURING PAST YEAR.—Two hundred and thirty-three thousand four hundred and eighteen.

THE CHOLERA has again made its appearance in India, as was expected, indeed, as the result of the pilgrimage of the past year. Apropos of the cholera: a French writer claims as a prominent cause of the pestilence the disappearance of a variety of crocodile, called the gaval. This animal formerly destroyed the bodies thrown into the Ganges, in accordance with the religious customs of India. But since the soldiers have been in the habit of waging war upon it, the gaval has been nearly exterminated. In the absence of its scavenger work, the bodies decay and produce the cholera; at least so claims this writer, who asks for a government protection of this important reptile.

AMERICAN MEDICAL ASSOCIATION—PRIZE ESSAYS FOR 1868.

The American Medical Association offers two prizes of *One Hundred Dollars* each, for the best two original essays upon subjects of professional interest; the Committee reserving the right to reject all, unless deemed fully worthy.

Competitors for these prizes must forward their essays to Dr. Charles Woodward, Cincinnati, Ohio, free of expense, on or before the 1st of April, 1868.

Each essay must be accompanied by a sealed note containing the author's name and address, and on this sealed packet must be inscribed some sentiment, motto, or device, corresponding to a like sentiment, motto, or device on the essay.

CHARLES WOODWARD, Chairman,	} Committee.
W. W. DAWSON,	
E. B. STEVENS,	
ROBERTS BARTHOLOW,	
P. S. CONNOR,	

Medical journals throughout the country are requested to copy.